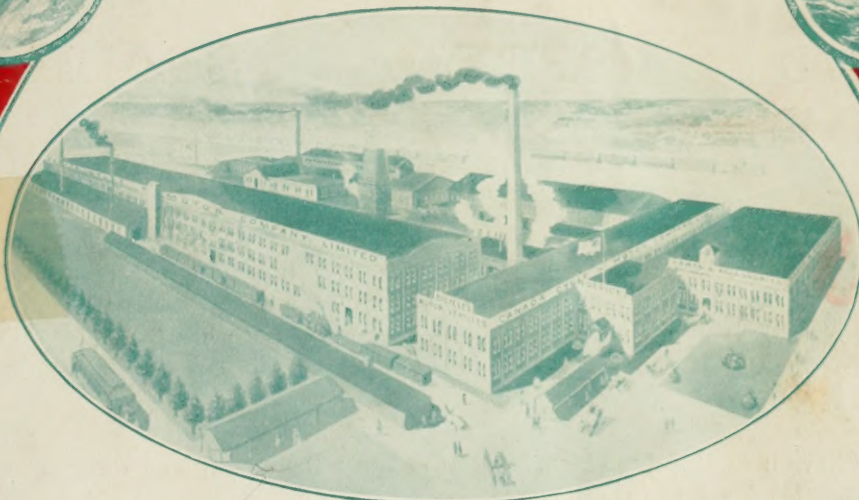


THE CANADIAN MOTOR

FEBRUARY, 1906

THE HOME OF THE RUSSELL



THIS is a view of the home of the "Russell" as it stood in October, 1905. Since that time we have added two large three story buildings because the home wasn't nearly big enough to accommodate us.

The "Russell" is the Canadian car that "made good" in 1905 because it was made right. The 1906 "Russell" is going to be the Automobile surprise of 1906. We know that, because we have tried the new "Russell" under severe conditions and we know what every other car made in America can do.

Two Cylinder Model B \$1,500

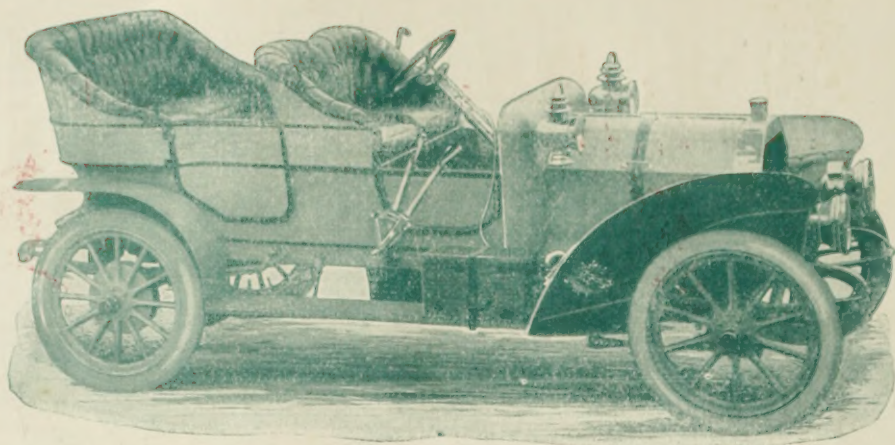
Four Cylinder Model C \$2,500

AGENTS WANTED IN GOOD LOCALITIES

**CANADA CYCLE & MOTOR CO.,
LIMITED**

General Office and Works
TORONTO JUNCTION

CANADIAN OLDSMOBILES



STYLE

SPEED

STABILITY

Model "S" Four Cylinder 26 to 28 h.p.

Price \$2,400, completely equipped for touring.

FOR STYLE

You have it in Model "S," the latest and newest approved European theories and designs, thoroughly adapted to Canadian requirements. The front door, first introduced by us, keeps out cold and dust and adds to the finished appearance of the car.

FOR SPEED

You have it in Model "S," surplus power for hill climbing and difficult roads, and all the "legs" you can possibly use.

FOR STABILITY

You have it in Model "S," high grade material, careful workmanship, and every part thoroughly inspected and tested to do its work and do it right.

OUR OTHER 1906 MODELS

Two-cylinder, two-cycle Touring Car. Model "L," 20 to 24 h.p.; price \$1,400. Light Tonneau, Model "T," 10 to 12 h.p.; price \$1,000. The Standard Runabout. Model "B," 7 to 9 h.p.; price \$775. Delivery Cars and Passenger Wagonettes.

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Olds Motor Works

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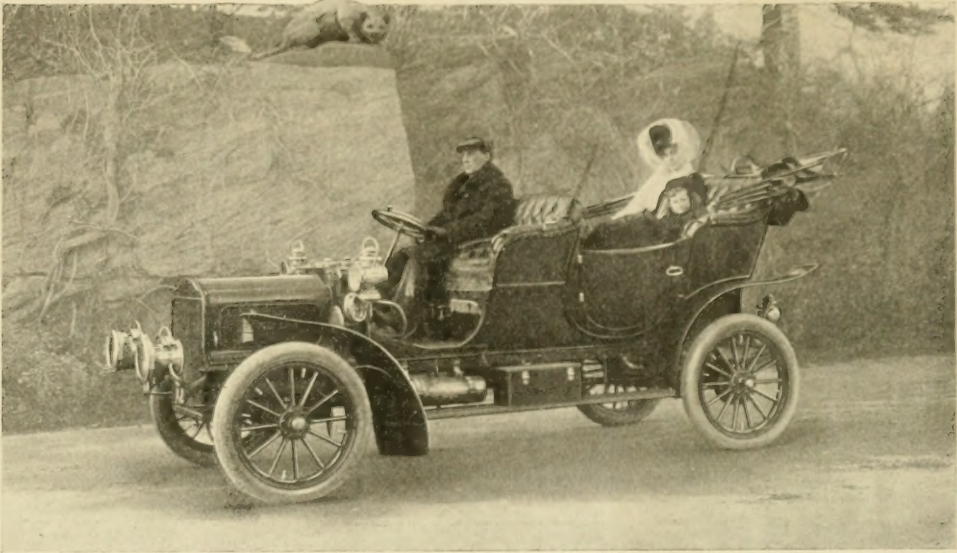
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The Incomparable **WHITE** The Car for Service



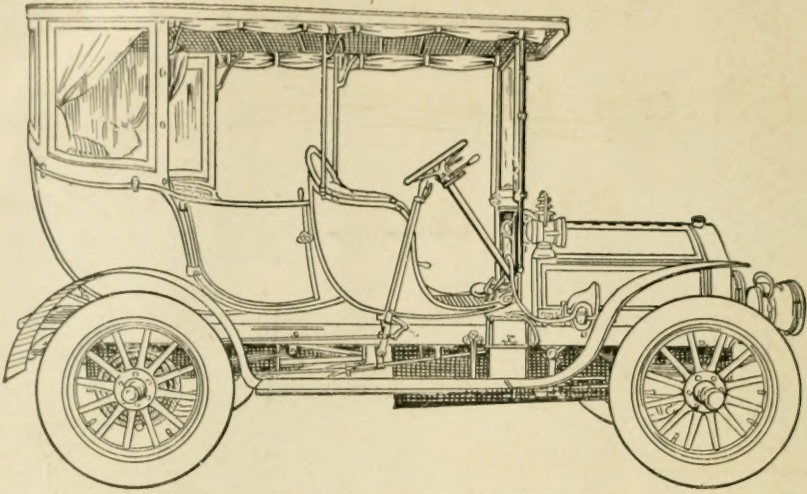
STEAM IS THE WORLD'S STANDARD MOTIVE POWER

On land and on sea, steam power is recognized as the most reliable, the simplest and the safest. No power other than steam is ever seriously considered by engineers for important work. The tremendous development of electrical machinery has served only to increase the importance of the steam engine which is, in almost every electrical installation, the "prime mover."

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The achievement of White cars in all endurance and reliability contests and the notable tours made each year by White owners are the most inspiring and convincing chapters in the history of American automobiling.

White Sewing Machine **Company**
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UNOCCUPIED TERRITORY

DEMONSTRATIONS CHEERFULLY GIVEN

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24 Temperance St., = Toronto

See that the engine's lungs are good lungs— they are in every NICHOLLS-LOZIER Gasolene Engine

Take it as absolute truth that the simpler the design of a boat engine the less trouble you'll ever have with it. Get that settled in your mind first, and then compare a Lozier with any marine motor made.

Compare the Lozier cylinder design, and specially compare the firing chamber—the lungs of the machine.

Ask the salesman, and ask yourself these pointed motor queries:—

Can there be burnt gases and fresh gases in the firing chamber at the same time?

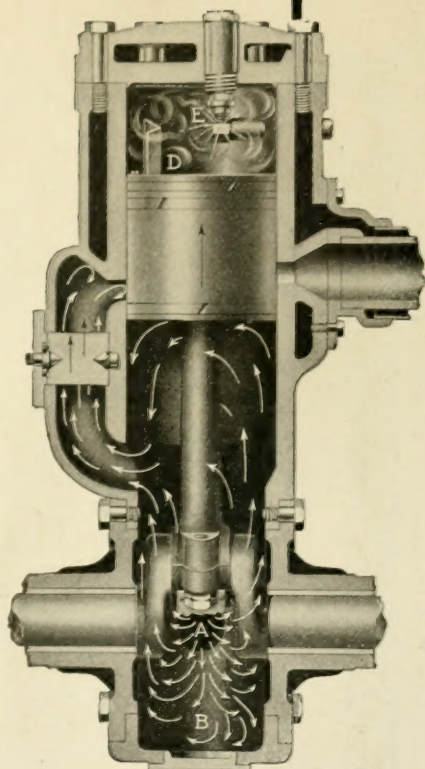
(There can't be in a Lozier Engine, so there can't ever be a "back fire" in a Lozier cylinder.)

Is there any chance that the firing plug can overheat?

(In the Lozier the plug is surrounded by cool water in motion—simply can't get hot).

What governs the amount of gas that shall enter at each stroke?

In the Lozier the piston controls both inlet and exhaust—no reliance is put on valves).

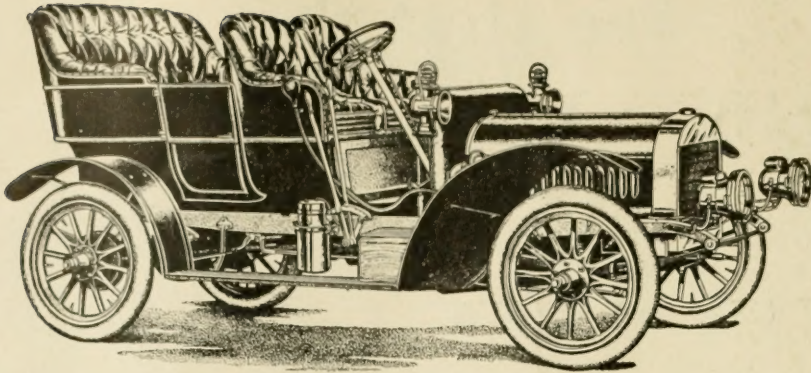


Don't go by printed descriptions or written claims. See the engine. See them all, and match them up with the Lozier. See it.

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CATALOGUE ABOUT MOTORS AND MOTOR BOATS

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Limited**

51 Lake St.,
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The Latest *Rambler* Model 14

All the modern features refined to *Rambler* simplicity.

Motor—Four cylinder vertical, 20—25 horse power. A triumph of accessibility and structural design. Valves opening into center of explosion chamber, ensuring quick clearance. Rambler throttle control, automatic lubrication, silent muffler without back pressure.

Safety Cranking Device by which motor is started without possibility of back-firing.

Transmission—Sliding gear, three speeds forward and reverse, with large wide gears running in oil. Bevel gear drive.

Wheel Base—106 inches.

Frame and cross members, pressed steel.

Brakes—Two sets, one on driving shaft, the other on rear wheels.

Body—Highest possible grade with ample seats.

Price, including full equipment of tools, lamps, horn, etc., \$1,750. Advance sheets giving full information at your service.

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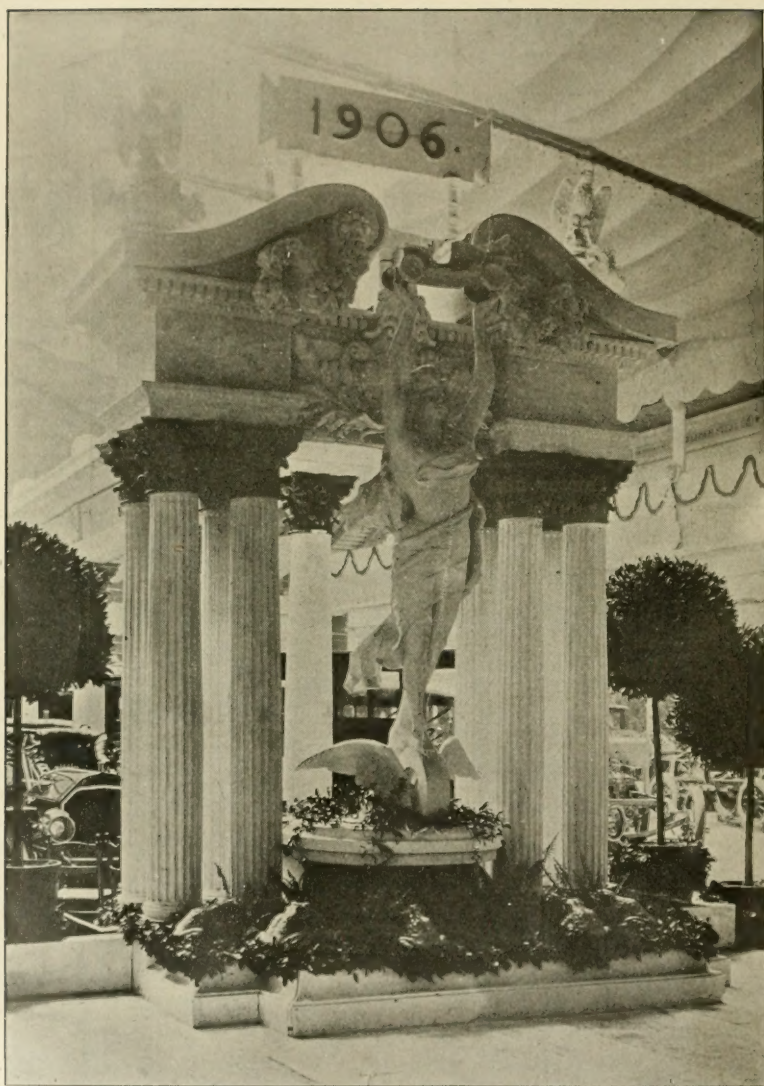
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When writing advertisers kindly mention the CANADIAN MOTOR.

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ENTRANCE NEW YORK AUTOMOBILE SHOW.

THE CANADIAN MOTOR

OLD VOL. XII.
NEW VOL. I.

TORONTO, CANADA, FEBRUARY, 1906.

No. 2.
No. 3.

New Features in Cars

Impressions at the New York Shows

By Chauffeur.

THE motor world is aware now of the 1906 models, as even before the advent of the New York shows several makers had announced their new designs and some fortunate customers were in possession of next season's machines.

To the great mass of motor owners, however, the opening of the doors of the Madison Square Gardens and the 69th Regiment Armory in New York, on January 13th, was the first opportunity to get a glimpse of the season's product, and although styles of construction have been boiled down to a fairly stable basis and startling novelties were not looked for, or if so, were looked for in vain, yet the importance of many details which have hitherto been crude and unsatisfactory made the shows of no less interest than formerly. That the public interest was manifested was evidenced from the fact, that where as last year all the American made machines were exhibited in the Gardens and the crowds filled the place to overflowing during the week, this year the Sheldon licensees controlled the Gardens and the unlicensed

makers had to exhibit outside, and so held the Armory Show, thus more than doubling the available space for visitors, and yet both shows were crowded to the doors during the entire week.

AUTOMOBILE FACTS

Number of Makes at the shows	126
American cars	99
Foreign cars	27
Estimated value	\$800,000
Capital of automobile firms exhibiting	\$70,000,000
Employees in American automobile factories	32,000
Cars to be made in 1906	40,000
Value of 1906 productions	\$45,000,000
Number of automobiles in U. S. and Canada	70,000

The Toronto Automobile Club kept up its time-honored custom of making the Show a Club feature, and the members trended down to New York in a body, filling three sleepers, which left on Sunday night the 14th. Some few we noticed went ahead of the party to see the opening of the doors on Saturday, among them being, President W. A. Kemp, and H. C. McLeod; but among the Sunday night party were:—G. H. and Mrs. Gooderham, J. C. and Mrs. Eaton, T. A. Russell, Wm. and Mrs. Hyslop, W. F. Turnbull, J. J. and Mrs. Main, P. Manning, A. E. Chatterson, S. Frank Wilson, M. A. Kennedy, E. B. Ryckman, H. H. Love, John Westren, C. M. Ricketts, W. J. Smith, and Mrs. Smith, Wm. Northam, Wm. Grant, C. R. Short, all of whose interests were centered on the new form of locomotion. It was a quiet, decorous party going down as Mr. F. W. Baillie's

magnetic presence was lacking to set the fun going and there was no President to put to bed as on a former occasion.

That they were expected in New York was evidenced when on arriving at the Grand Central station next morning a number of automobiles were waiting to take them to their various hotels, and during the week's stay the local agents and the firms they represent vied with each other in doing the honors to the Canadian visitors; such attention evidently not being wasted from the reports of sales made while they were there.

Artistic Decorations.

Up till this year no effort had been made to give an artistic setting to the Motor Shows or to have any artistic scheme of decoration carried out, the result being a hodge podge, in which one maker's exhibit with his enormous and glaring and frequently ugly signs would quite eclipse his neighbors, and to find any one stand without a catalogue or conspicuous sign was a difficult task. This year, taking a pointer from the Paris Salon, which has been noted from its inception for its artistic and harmonious settings, both shows made a very successful effort in the decorative line, with the result that must have been gratifying to the management and was certainly very pleasing to the visitor.

Madison Square Gardens was transformed, the entire ceiling with its bare iron work being covered with an artistic star-spangled drape in delicate shades of blue. The galleries were decorated also and completely covered, while all exhibit signs were uniform in size, in design and color. The lighting effects for each stand were so arranged that no electric bulbs were visible. Instead, from protected cornices the light was shed on the exhibits and the signs greatly enhancing the beauty of the setting and relieving the eyes entirely from the strain of constantly gazing on uncovered lamps.

Owing to the lessened number of exhibits at Madison Square Gardens there was much more floor space available than in former years for sightseers, the stands being arranged all around the circle with a double row up and down the centre, leaving a very broad space for promenading and permitting quite half as many more to comfortably visit the Show at one time as on former occasions.

The 69th Regiment Armory also was handsomely decorated, though not on such an expensive scale. A novel feature there was an exhibition of balloons and other aeroautic cars loaned by the Aero Club. There monsters, three or four of which were suspended

from the ceiling, lent an additional attraction to the main auditorium, while in the annex, a very large exhibit of this Club was the object of much curiosity.

Of further interest was the small theatre attached to the annex in which were hourly displayed moving pictures, showing the Gordon-Bennett race in Ireland, the last Gordon-Bennett in France, the Vanderbilt race on Long Island, the Aero Club's balloons in full flight and other timely and suggestive views.

The visitor looking for startling novelties was, no doubt, greatly disappointed, and yet, a careful look over the cars staged, (and nearly every firm had a chassis which allowed of a careful inspection of all the details of mechanism), showed that great strides had been made in the last year in perfecting, simplifying and making the motor vehicle of the present season a far more trustworthy carriage than it has ever been before.

Two Striking Features.

The most radical departure from previous shows was the advent of the six-cylinder car, shown by three or four American firms as well as by the English-Napier Co., the original builders of this type. This and the low four-cylinder runabout, of the Ford Motor Company, exhibited at the low price of \$500, were the talk of the show, and were constantly surrounded by crowds, which made it difficult to look over them. The six-cylinder car with its even torque is certainly an ideal touring vehicle and its ability to be driven from a creeping pace to its highest speed without changing gears, makes it a very desirable type for the gentleman whose purse is long enough to put up the very increased price of such a car over the standard four-cylinder.

In the way of a genuine novelty the Reo Motor Car Company showed a tiny facsimile of their regular touring car just large enough to seat two or three little children, but perfect in its detail and capable of being operated.

The light limousine and station car equipped for all sorts of weather was much in evidence. Nearly every large firm had one such body on exhibition. The runabout car seems to have been given less attention than these large types of cars, and with the exception of the Ford already mentioned, there was little new in that line.

In minor detail a few things were noted, which we think are well worthy of mention.

One was a starting device shown on the Duquesne car, which simply consisted of an extra pedal to the right of the ordinary operating pedals and having a longer throw than



MADISON SQUARE GARDEN AUTOMOBILE SHOW.

the others, which turned over the engine by a pressure of the foot instead of the driver having to get out in front of his car and crank it. It was simple in construction, and looked like a possible feature that might with advantage be adopted by all cars that are being used for run-about or other purposes where the engine is frequently stopped and started.

Another device was shown for the same purpose, which consisted of a spring arrangement, the spring being wound up by the engine when in motion. To start the engine it was only necessary to remove the catch upon which the engine would be turned several times over; of course if the engine failed to explode on its initial turn the run down spring would have to be wound up by hand. This was more complicated than the Duquesne device, but both of them were along the line of simplifying that feature of the gas engine.

Changes in Tires.

In tires there was little new, excepting that the different makers are realizing the importance of simplifying the attachment and detachment of tires, and besides the Dunlop bands, the Goodyear, the Goodrich and the

Diamond Companies each showed a readily removable side flange for quickly attaching the tires.

Other than the attaching departure in tires there was little novelty, excepting that one firm showed a pneumatic tire in which the air tube was carried down into the rim and between it and the tread were interposed, first a rubber cushion, then a tread section, the idea being to keep the inner tube away from the possibilities of a puncture. This was shown in rather a crude state, but might be capable of vast improvements. It may have possibilities, but as shown the tire would be very dead, and would be more satisfactory for truck and heavy purposes than for light pleasure cars.

Various New Features.

In clutch levers, a number of makers have advanced from the lever passing through different gears for different speeds to the selective type, in which the gear lever is carried from neutral to any desired gear forward or reverse without going through any other gear and being in neutral when out of any gear.

The air cooled engine can just about hold its own. Several firms showed cars using it,

but most manufacturers stick to the water cooling, and one or two firms formerly showing air cooled cars have abandoned this method for the former.

In body designs there seems to be a tendency for individual designs to render certain makes of cars distinctive. The King of the Belgians, the Tulip and the Victoria were largely standard.

In carburettors, the float feed is almost universally used and on all but the very cheap types of cars the automatic type is practically the rule.

Another feature that in our judgment promises more for the satisfactory operation of the car and for lessening the wear and tear heretofore experienced is the more general adoption of piston forced feed lubrications to the essential working parts of the car.

A year ago not one in ten of the cars, even the high priced had forced feed lubrication, most of them depending on gravity or slight pressure on the oil feeding, through regulatable openings, but as the oil varied in density with changes of temperature they needed constant watching and regulating. We ran a car all last season fitted with forced feed oilers, which after once adjusting were never again looked at, and on taking down the engine in December there was no trace of wear in any of the bearings, the oil used being the ordinary standard gas engine cylinder oil. This lubricating system in our judgment makes the greatest advance in automobile construction for the year.

Friction Drivers Adopted.

At every English show since the motor car became a fact there has been shown one or two friction drives. America seems to have fought shy of this idea until the present show, and here we see no less than three exhibits showing the device. One, the Waltham Manufacturing Company, had a friction disc drive on their buckboard runabout, while the Windsor Automobile Company shows it attached to a large touring car. Another concern exploiting the drive, showed it not attached to any car.

The objections claimed against the friction drive where a friction face wheel drives another at right angles is the fact, that of the friction contacting surface only a line is in true frictional rolling contact, the rest of the face of the driven wheel, sliding faster or slower than the true rolling surface. This system of transmitting power has been adopted on drill presses and light machinery for a great many years, and for that class of work has been eminently

successful. Its great advantage is that it changes the ratio of speeds of the two shafts from zero to a maximum by infinite gradations, so that to obtain any gear from zero to the highest only requires that the friction wheel be carried from the centre of the driving disc to its periphery.

That this form of drive like the old Benz belt driven car would prove unsatisfactory on hills or where there was heavy traction has always been claimed and yet we remember at the crystal palace show four years ago seeing a runabout car fitted up with this drive with six people crowded on to it climbing the steep hills near the palace with perfect ease and surety, and we are frank to confess that our strong objections to this form of drive have been considerably modified. It forms the ideal gear to manipulate, as there are no clacking of gear wheels and instead of being limited to two, three or even four forward speeds, the work the engine is doing is regulated and its best working speed can at all times be maintained, while the adoption of vulcanite fibre discs in thin ring section renders the slipping and wearing surface of the driven friction wheel readily and cheaply renewable.

We are satisfied it will make good on the light run-about and we shall watch with much interest its behaviour on the heavy touring car. Of the designs shown at the show, one simply consisted of a driving disc attached to the main engine shaft, while slidably mounted on a cross shaft was the driven friction wheel with its shaft so mounted that it could be forcibly compressed or entirely released from contact with the driving disc at the will of the operator in such a way that when the traction increased any tendency to slipping could immediately be overcome by increasing the pressure between the two surfaces. The reverse was obtained by swinging the driven wheel past the centre and again contacting it, thus reversing its motion. In the device applied to the touring car two wheels were mounted on a driven shaft, one at either side of the centre of the driving disc, so arranged that one only contacted with the driving disc, while its mate revolved just out of contact with the driving disc, but in contact on its opposite side with a revolving disc similar to the driving one. This latter disc was arranged to forcibly compress the wheel running between to give any desired friction pressure, while to reverse the car the driven shaft was rocked slightly throwing the wheels into opposite contact. If this proves satisfactory on touring cars it will greatly simplify construction and operation.

Shock Absorbers.

Shock absorbers came in for a good deal of attention and were shown in several varieties, the best known being the Hartford, which has been marketed for two or three years. Among new devices were an air cushion arrangement consisting of a closed cylinder with a piston normally in the middle position, its piston rod being attached to the body of the car and the cylinder to the axle. It had little retarding effect on light spring movements, but prevented either a violent contraction of the spring or a severe rebound. Another ingenious device consisted of an expanding friction drive in a cylinder which allowed a perfectly free movement of the spring in the one direction, but prevented rebound by expanding the inner drive on a reverse movement.

Speed Indicating Devices.

In speed devices, several speedometers were shown, among them being the well-known Jones speedometer and the Centrifugal Electric brake register that have been seen in Canada during the last season. Of the newer ones, two are interesting enough to deserve special attention. On one a centrifugal pump forces a colored liquid up through a glass tube with a scale attached. The greater the speed the higher the liquid mounts, and this claims to give very steady registering, even on rough roads. In another, the general idea was very similar, but in the place of the liquid is a small air pump driven from one of the driving wheels, the air forcing a small index up a closed tube

similar to the liquid in the previous one mentioned.

All of these devices seem to be only approximate in their results, and the field looks open yet for a speedometer that will absolutely register in all conditions of weather and temperature the exact speed at which a car is travelling and record the same, so that the instrument can be used in evidence where the question of speed was the subject of investigation.

Altogether the shows possessed much of interest both to the casual sightseer and to the earnest student of the newer locomotion, and if the interest shown by the crowds in attendance can be taken as a guide, this year promises a greater expansion than ever before in the industry.

Montreal Motorists at the New York Shows.

THOSE who attended the New York automobile shows from Montreal included Sir Montague and Lady Allan, J. R. Meeker, W. Carruthers, Geo. T. Hartt, Clarence F. Smith, Mr. and Mrs. George W. Fairbanks, Mr. and Mrs. F. H. Anson, C. D. Deakin, J. H. Hunter, and Bert Fogarty. The local trade was represented by L. D. Robertson and T. H. Warrington, Eastern Automobile Company; N. P. Bryant, and F. B. Stockwell, Dominion Motor Car Company; W. P. Kearney, The Rubber Tire Wheel Agency Company; J. Ernest Millen, John Millen & Sons; F. R. Crombie and J. K. L. Ross, The Automobile Import Company, et al.

TENDENCIES BY STATISTICS

THE CAR EXHIBITS	At Garden Show	At Armory Show	At Both	MOTORS ON DIFFERENT MODELS OF GASO- LINE CARS.	At Garden Show	At Armory Show	At Both
Machines displayed.....	142	169	311	Water-cooled.....	84	136	220
Gasoline cars.....	83	136	219	Air-cooled.....	13	12	25
Electric cars.....	26	10	36	Four-cycle.....	94	147	241
Steam cars.....		9	9	Two-cycle.....	3	1	4
Electric commercial cars.....	19	2	21	Four cylinder vertical.....	82	107	189
Gasoline commercial cars.....	14	12	26	Double-opposed horizontal.....	4	23	27
Motor cycles.....		12	12	Two-cylinder vertical.....	3	7	10
RUNNING GEAR CONSTRUCTION				One-cylinder horizontal.....	4	1	5
Pressed steel frames.....	113	119	232	One-cylinder vertical.....	1		1
Structural iron frames.....	9	14	23	Six-cylinder vertical.....	2	5	7
Armored wood and other frames	20	36	56	Other patterns.....	1	5	6
Tubular front axles.....	42	63	105	Jump spark ignition.....	71	121	198
Forged front axles.....	100	106	206	Make-and-break ignition.....	18	24	42
Full-elliptic springs.....	28	20	49	Both.....	8	3	11
Semi-elliptic springs.....	110	114	224	Batteries for ignition.....	55	92	147
Both.....	3	35	38	Magneto or dynamo.....	22	29	50
				Both batteries and dynamos.....	20	28	48

* Two of these composed of manganese bronze.

A Modern Cruising Motor Boat

THE vogue and popularity of the motor boat is amply proven by the increase in size and the numbers of the type which are coming into use. This is true of all countries, but more especially in the United States. The type that is most popular and which offers the best facilities for cruising, is that known as the Trunk Cabin. With a boat of this type of moderate size, it is possible for a small party to live aboard for a long period quite as comfortably as they could ashore. The type, it must be confessed, has none of the lines of beauty associated with the old fashioned sailing yacht, or with some of the older motor boats, but in these days, utility is more considered than looks, and it is a case of "Handsome is that handsome does."

The design which we publish, is by M. M. Whitaker, formerly president of the Canada Launch Works, and is for a prominent Toronto yachtsman, who has forsaken the sails for the motor. The dimensions of the boat are, length over all, 42 feet; length on the water line, 38 feet; breadth, eight feet; draft, three feet. The hull shows ample freeboard with a fair amount of sheer, and is of a type which is seaworthy enough for any storms that may be encountered on Lake Ontario.

The hull is to be strongly constructed with white oak keel and framing, and British Columbia cedar flooring. The deck house is low, but full head room is furnished.

Entering the cabin, one goes through a short passageway, having full length rockers on one side, and enters the galley, which is fitted with ice box, stove, shelf, dish racks, and all conveniences for cooking. On the opposite side, the boat is partitioned for the toilet room.

Passing through a door with glass panel, one enters the main cabin, which is twelve feet long, and is fitted with seats on each side, which can be used as berths and furnishes accommodations for four to six people.

The engine room is entirely separated from the cabin by bulkheads and all noise and smell is confined. In the engine room is also a berth for the engineer, with lockers for tools, etc.

The cockpit is large and roomy, having removable seats on each side, and at stern, under which are stored the gasoline tanks, care being taken in placing the gasoline piping so that any leak would run directly overboard.

The space under the after deck entered through the bulkhead at the end of the cockpit, is left open for storage of the duffle, which sooner or later accumulates aboard ship. A water tank is also supplied, being carried in the fore peak, and furnishing the bowl in the toilet room, with running water, and also water for cooking purposes through a tap low down in the bulkhead.

The boat will be equipped with anchor, cable, lights, and all fittings necessary to make her complete in every respect, and will also have an awning extending over the cabin house and cockpit, for use in pleasant weather. This will be so arranged that the forward half can be removed in heavy weather, and by attaching spray cloths to the forward end of the cockpit, the helmsman will be protected from the flying spray.

The boat will also be equipped with dinghy and side ladder. The motor will be a 15 h.p., 3-cylinder one, which is expected to give a speed of about eleven miles per hour.

When complete the boat will be well furnished in every respect, and should form an ideal summer home, as it is large enough to go anywhere about the lake, and of light enough draft to enter any of the harbors.

It is similar in type to the "Klein" and "Winona," already familiar to Toronto motor yachtsmen, and will be a notable addition to Toronto's fleet of motor boats.

Coming Events.

February 12-17—Detroit Automobile Show.

February 19-24—Cleveland Automobile Show.

February 24-March 3—Philadelphia Automobile Show.

March 5-10—Buffalo Fourth Annual Automobile Show.

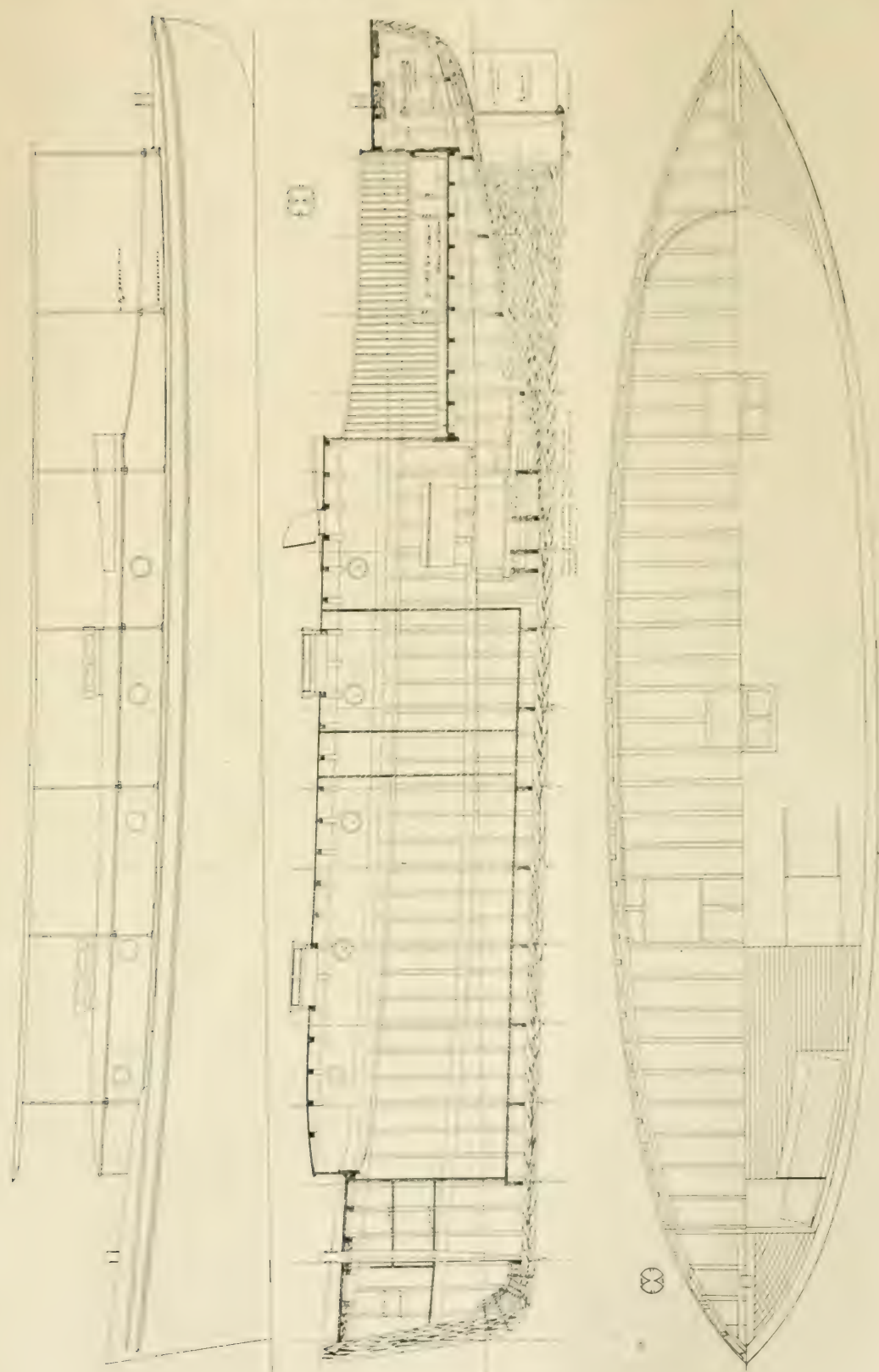
March 10-17—Boston Auto Show.

March 24-31—Automobile Show, Agricultural Hall, London, England.

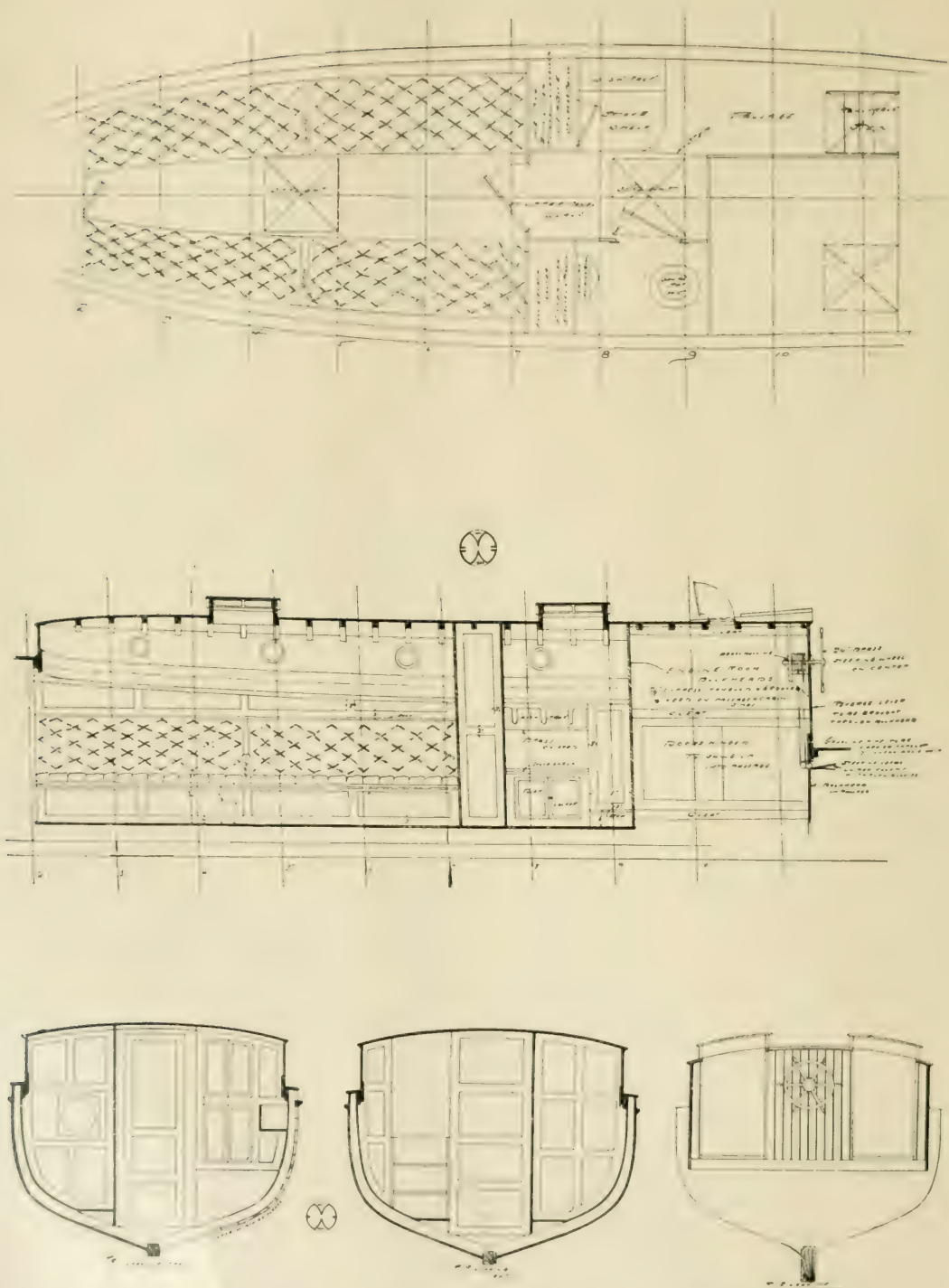
March 31 to April 7.—Toronto, Ont.—International Motor Exhibition, Granite Rink. E. M. Wilcox, Manager.

April 21 to 28—International Automobile Show, Montreal.

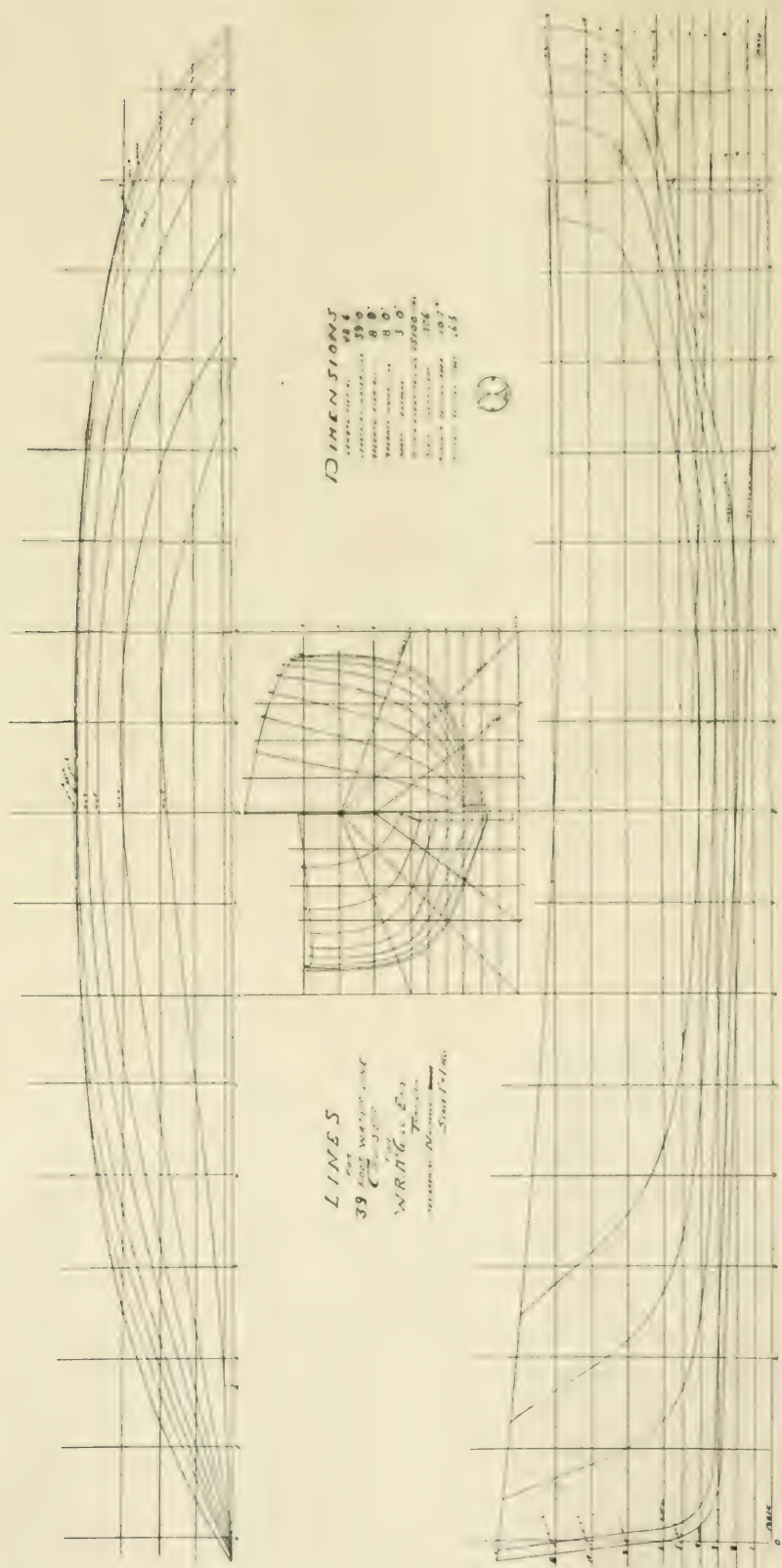
THE EIGHT-CYLINDER 300 h.p. French motor boat Antoinette III. has established a new world's record at a recent motor boat race in Italy, covering a distance of 94.6 miles at an average speed of 31 miles per hour.



Plans of 39-foot Trunk Cabin Cruiser. Designed by M. M. Whittaker.



Plans of 30-foot Trunk Cabin Cruiser. Designed by M. M. Whittaker.



Plans of 39-foot Trunk Cabin Cruiser. Designed by M. M. Whittaker.

The Care of Tires

[The following letter with accompanying article has been received. The article contains some useful information on the subject of tire cost, discussing the question from the manufacturers' standpoint.]

EDITOR THE CANADIAN MOTOR:

A copy of your January issue came into the writer's possession and has been closely scanned from "kivver to kivver." You deserve commendation from whatever standpoint your magazine is judged, especially in view of the fact as I understand it that this is your second number. Not as bulky as some, but meaty nevertheless.

After reading "Chauffeur's" dissertation on theme,—“Upkeep of a Motor Car,” I could not refrain from “butting in.” Before consigning to the Editor's “Potter's Field,” I trust you will have the patience to wade through and if there be any usable ideas discovered, you are welcome.

Yours cordially,

TIRES.

The article follows:—

The discussion by “Chauffeur” in your January issue has impressed the writer as well timed and in most points carefully calculated, but I do most decidedly disagree with him on at least two items of cost,—Tires and gasoline in tables Nos. 1 and 2. They are altogether too high in the light of present day experience.

He qualifies his statement of tire cost as to the first year in table No. 1, but leaves table No. 2 without any explanatory note whatever, so that a novice “studying up” on motor cars in general would carry away the impression that a light touring car such as the Ford model F, Rambler Surrey Type One, or Oldsmobile Model T, Light Tonneau, will average him \$175 per season for tires alone.

The cars enumerated above as well as those of practically every manufacturer of note, coming under the designation of light touring cars are equipped with 30x3½ inch detachable or clincher type of tires.

In my connection with one of the largest manufacturers of tires in the United States, and dealing with both classes of tire users, the satisfied and the dissatisfied, my conclusion is that the average user runs from 1,800 to 2,000 miles before he is called on to make any outlay worth mentioning on his tires.

My advice to the ordinary user would be to purchase an extra inner tube when he invests

in the car, also either a rawhide sleeve or repair bandage. Cost of the tube is \$8.36, sleeve or bandage, \$2.50 to \$3.50. To the car owner whose touring limits are not more than fifty miles from home, these are all the tire extras he needs.

For a simple nail puncture all he has to do is to take out the damaged tube, insert the spare one and go on his way rejoicing. If he is unfortunate enough to run over a broken glass bottle or splinter so as to cut a hole in both casing and tube, he will find in the tire repair outfit furnished with the car, a canvas patch technically called frictional fabric. The booklet of instructions included in the same kit will explain how it is to be used. He places this on the inside of his casing, inserts the spare tube, laces the sleeve or wraps the bandage over the outside, inflates the tire and proceeds on his journey. Once home he can repair the punctured tube at his leisure. In the case of a cut in the outer casing such as those just mentioned it will necessitate sending his casing to the makers or to a repair concern whom *he knows to be absolutely reliable*. Cases innumerable have come to the writer's notice where outer casings have been irretrievably ruined by concerns pretending to have facilities for all classes of repairs, whereas had they been sent to the maker in the first instance they could have been durably repaired at moderate cost.

All summed up, an ample allowance for tire cost for the first season would be:

One extra inner tube.....	\$8 36
One rawhide sleeve or bandage.....	3 00
One repair executed at factory (including expressage both ways)....	7 50

\$18 86

(He will receive punctures no doubt, but his cost for repairs on these, if he is of an economical turn, will be for all practical consideration, nil. His tire repair outfit will contain all necessary material to mend a dozen punctures).

After 2,500 to 3,000 miles of service (according to locality and road conditions), his casings will need retreading or recovering. The present cost of this work in the United States is \$11 to \$12 net per casing. With this outlay, which puts his casings in practically as good condition as when new, he is ready to start his second season. We will allow a much larger latitude for trouble the second season. His tires have aged somewhat, he drives faster and is less careful of road conditions.

Making these allowances, the average will work out something as follows:

Four casings retreaded, \$12 each....	\$48 00
Expressage on same.....	3 00
One new casing to replace one ruined by injury.....	\$7 61
One new inner tube to replace one ruined by injury.....	8 36
Repairs to one casing and expressage.....	15 00
	<hr/> \$111 97

At the opening of the third season we find him with three casings more or less worn out and untrustworthy and he invests in three new tires complete. The new casing purchased last season will probably need retreading this summer. One of the discarded casings and a couple of the old patched tubes he can carry as extras. His third season tire bill will stand about as follows:

Three new 30x3½ inch tires complete, at \$37.61 each. (Figured at present United States retail prices of \$39.59 each, less 5 per cent. cash discount.....)	\$112 83
Retreading one casing, and expressage.....	15 00
Allowance for emergencies.....	15 00
	<hr/> \$142 83

Starting with the fourth season he purchases two complete new tires which give indications of being in poor condition:

Two new casings at \$37.61 each.....	\$75 22
Two casings retreaded at \$12 each, and expressage.....	27 00
	<hr/> \$102 22

This outlay with the salvage of his old ones should carry him through this season without a further outlay of one cent.

The deductions above give the tire cost in table No. 2, as follows:

First Year.....	\$18 86
Second year.....	111 97
Third year.....	142 83
Fourth year.....	102 22
	<hr/> \$375 88

An average cost of \$93.97 per season.

The motoring season in Eastern Canada will approximate eight months each and my figures are formed on this basis. Let us dissect "Chauffeur's" estimate of mileage (5,000 miles). It means that for 240 days the car must be driven an average of nearly twenty-one miles per day, a wholly impossible figure for the class of people who are likely to invest in this type of car. This amount of mileage can be well cut in half, therefore, the gasoline cost can be cut likewise and using this basis we arrive at a cost of upkeep per season of \$466.47, instead of \$590.

Along the same lines (based on using 23x3 inch tires) table No. 1 will give an average of about \$70 per season for the tire cost and a corresponding reduction in the gasoline figures.

The 1906 Standard Car

THE standard car at the opening of the year 1906, is a four-cylinder touring car of 24 to 28 horse power, weighing from 2,000 to 2,200 pounds, or a 30 to 35 horse power machine, weighing from 2,200 to 2,400 pounds. The four-cylinder motor is housed in a bonnet at the front, and the power is transmitted through a three-speed, sliding-gear transmission by shaft-drive and bevel gears to a live rear axle. The wheels are distinctly larger, being 32 to 34 inches in diameter, with large tires 4 or 4½ inches in diameter.

The standard car shows marked improvement in the arrangements for lubrication of the engines, a continuous circulation being secured by some form of mechanical forced-feed oiler, the oil passing through sight-feed glasses carried at the front of the machine on the dashboard. The familiar leather-lined cone-clutch has given place to a multiple-disk

clutch, and as the disks run continually in oil, there is a certain amount of slip when the disks are first compressed, so that the clutch takes hold without jar or jerk. This renders it possible to start a car on the high speed from a standstill.

The typical car is fitted with spring-separated ball bearings in the transmission and the wheels, with the choice of roller bearings for the rear axle, wheels, and countershaft. Ball bearings have been in use now for two seasons, and may be considered as standard practice. We note that one car shows roller bearings on the ends of the engine crankshaft. The greater ease and smoothness of running are attributed to shock-absorbers, rebound-checking devices, and pneumatic tires of large diameter. Although the type car does not carry them, inventors have been busy endeavoring to find some device which will permit of the use of solid tires on the road wheels, without losing

the shock-absorbing and high tractive efficiency of the pneumatic tire.

The standard car depends for ignition upon the jump spark, with high-tension magneto or storage battery. The valves are mechanically operated and are interchangeable, two sets being used, one on each side of the motor. The type car may carry either cellular radiators or those of the finned tube pattern, while some of the cars use flattened tubes provided with radiating fins. The car carries two separate brakes, one of the expanding ring type, the other a band brake, acting within and on the

outside of a drum on the rear wheel. The band brake, worked by a pedal, is for ordinary use, and the expanding ring brake, which is applied by the hand, is used for emergency. Finally, the engine is controlled by separate spark and throttle levers, mounted on stationary sectors in the steering wheel.

It is a matter of congratulation that the industry has now grown to such proportions that the manufacturers are enabled to turn out a standard car which is at once superior in construction and lower in price.—Scientific American.

The Doctor and the Automobile

By P. E. Doolittle, M.D.

THAT the automobile was not merely a toy for the rich, but had great locomotive possibilities was early recognized by the doctor, with whom the transportation problem has always been a live issue, and almost before the general public believed it was more than a passing craze the doctors were buying cars and proving that even in its early, crude state it was of immense advantage to them in the pursuit of their professional duties.

In Toronto among the first physicians to adopt automobiles for professional services were Dr. A. McDonald, and myself. Since then Drs. Scadding, Gullen, and Jennie Gray, Greig, Alexander, Davidson, Howitt, Sylvester, Emory, I. Noble, H. W. Aikins, Hay, Perfect, Cuthbertson and Young have joined the motoring ranks.

With the present perfected state of the automobile, its advantages to the country physician are so manifest that we look forward during the coming season to a very large increase in the motor ranks by members of the profession throughout the Province. A satisfactory doctor's car can be bought for much less than a thousand dollars, capable of maintaining an average speed of fifteen miles an hour over all but the very worst roads and powerful enough to climb any hill without difficulty. One such car will easily do the work of three horses for the busy country doctor, will double his leisure hours and greatly increase his profits, while during favorable weather the long, tiresome drives behind jaded horses will be delightfully replaced by the rapid motor doing the distances in a fraction of the time, without thought of pity for the motor power or serious loss of time. With the advent of the motor in a country village and its constant appearance on its highways and by ways, the horses will get over their

restiveness and the antipathy which some farmers have against motors will quickly disappear.

The motor car that takes the doctor to the bedside of the farmer's wife in half the time a horse would and by promptness enables him to save her life can no longer be considered a thing of evil.

In Ontario the deep snows of the northern section would render the use of the car impossible for several months out of the year, but there is no more reason why a doctor in such sections should forego its use during its season, than that steamboat men should give up their form of transportation because the rivers are frozen in January. With the addition to the present light car of a still lower gear and the attachment to the wheels of suitable gripping devices there is no reason why the future doctor's car cannot wade through snow drifts quite as deep as his horse could haul him and in better time. We believe that within the next two years the doctors will demand such an all-the-year-around vehicle, and there are no obstacles in the way of the manufacturers meeting such demand.

The exhaust from the engine can be made to thoroughly heat the car which can readily be made enclosed, and in zero weather the doctor can go to the bedside as warmly as he can sit in his surgery, instead of getting thawed out at the stove before approaching the sick one. He is ready immediately to give attention to his patients.

The essential requirements for an all-the-year-around-car are light weight, ample power, traction devices for the wheels for mud or snow and an enclosed body properly heated, and we confidently expect that the next annual shows will have any number of cars of such a type on exhibition.

Oiling a Marine Engine

WITH the man who uses a launch for pleasure only, the small number of hours that the engine is kept actively at work—as a rule—during the season, makes the question of first cost of the engine of far more account than its economy.

Next in importance to this is simplicity of construction and operation.

With these two last features sought as the main essential, the plain old reliable two-cycle engine has never been equalled, and in nearly seventy-five places out of one hundred, the two-cycle engine will, as an "all round thing," be found the most suitable if the launch is used but a couple of days a week and the owner does not wish to bother with the care of more delicate machinery. For an engine that will stand the utmost abuse and still be ready to plug along in a good old fashioned "dog trot" sort of way there is nothing like the two-cycle, with its simple needle valve vaporizer.

Most of these two-cycle engines are, however, more or less defective in one particular. They depend on arrangements for oiling that are too crude; that are in fact defective when we attempt to get anything like the power from the engine that it should give for its size.

The bearing which is subject to the most severe service, is at the crank end of the connecting rod. In nine engines out of ten this bearing runs dry in an hour's time, because the designer of the engine has depended upon the end of the rod splashing about in the oil supposed to settle in the bottom of the crank case.

When the oil is of sufficient depth in the crank case to keep the connecting rod bearing well oiled, so much of the oil is splashed upon the piston that it is carried over with the charge and prevents the spark from forming in the cylinder head. In splash lubrication nearly ten times as much oil is wasted as would be necessary to use could each drop be carried to exactly the right spot.

The pounding and loss of power of a two-cycle engine after being run an hour or so at full speed is often found to be due to the fact that both the piston rings and connecting rod bearings are not well enough oiled to keep them from heating.

As a well oiled and well cooled engine will not only work with higher economy of fuel but will give from double to treble the power by increasing the speed of rotation, consequently, competition is going to bring out a type of two-cycle engine with high rotative speed, making in small sizes something between 1,000 and 1,500 revolutions a minute—against former speeds

of between 300 to 400 for the same size of engines.

Practically the only modification necessary to make existing types of marine engines suitable for these increased speeds is to provide: first, an oil way in the crank that leads the oil from the main bearings to the connecting rod or crank end bearings. An oil duct through the connecting rod and a ring for holding oil into which the bottom end of the piston dips at each stroke and thus carries a small amount—and only a small amount—of oil up the cylinder sides at each stroke.

The vital point about piston oiling is the small amount of oil each stroke and not a quantity of oil occasionally with nearly dry periods in between.

The simplest way of carrying the oil to the connecting rod bearing is to have a cup or rather a sort of saucer with turned over rim on the crank and revolving with it. This cup is so placed that the oil spun out of the main bearing of the crank shaft is caught in the cup and flows out through a duct near the cup's rim to the centre of the crank pin bearing.

The oil splashed or wrung out of the crank pin bearing which happens to strike the inside of the piston or the cylinder wall will tend to drain down into the ring-like cup into which the piston drops.

These two improvements add but an exceedingly small amount to the cost of an engine, but they add at least 100 per cent. to the power which the engine can be safely depended on to give with the same amount of wear at the higher speed.

Where an engine is put to heavy continuous service, its extreme simplicity is often a secondary consideration, if that simplicity entails a greater cost of running.

There can be no question but what with equal care in the making, the four-cycle engine burns much less gasoline and uses much less oil than the two-cycle of equal power, and, also an important fact, the four-cycle engine weighs less for the same power.—W. M. Herring, in *Gas Power*.

MOTOR CLUB OF NOVA SCOTIA.

At an enthusiastic meeting of motorists in Halifax on January 17th, it was decided to organize the Motor Club of Nova Scotia. Mr. Charles Darlington was appointed secretary and a committee of eight, with power to add to its numbers was appointed to prepare details of organization and report at a subsequent meeting.

The Model L Olds

THE 1906 Oldsmobile, Model L, has a marked individuality, though it approaches in general appearance the lines of several foreign machines very popular in America. The front axle is brought well forward, and the rear wheels back, giving a long wheel base and adding to the easy riding qualities of the car. The tonneau is so constructed that it is easily removable, and the "Beetle back" language compartment is built for utility as well as for appearance.

The motor is two-cylinder, two-cycle, vertical water cooled, placed under bonnet at front; cylinders five inch bore, five inch stroke rating, twenty horse power or better, giving ample road efficiency. The cranks set at 180 degrees are counterweighted, reducing vibration to the minimum. Lubrication is by the Hill Precision oiler, bolted to brackets upon cylinders, and driven by eccentric pistons lubricated on both sides. Crank pins are oiled through middle main bearings. This system prevents smoky exhaust.

The cylinders are of the best gray iron. The crank case is of aluminum, the lower half being removable without disturbing the bearings. The crank shaft is drop-forged and subjected to a special heat treatment, finished all over and perfectly balanced. The bearings are of generous proportions and consist of bronze one-half shells with babbitt lining. Thus any bearing may be replaced without trouble or rebabbiting.

Cooling is by water circulated by gear pump. Radiator of flat tube construction. Ignition, one storage cell, one set dry batteries—six cells. Spark coil on dash. Commutator bevel gear driven. The spark plugs are set at an angle to prevent fouling with oil.

The transmission is the sliding gear, three speeds forward and one reverse. The gears are of special high carbon stock tempered and hardened. The control is of the selective type operated by a single lever which cannot be thrown into reverse until pawl has been lifted, a precaution against accidental jamming of gears. The clutch cone sets into fly wheel. The clutch is thrown out by a foot lever and also by emergency brake lever. The transmission case is of aluminum, the lower half being removable at top. Transmission is

splash lubricated from case through pockets packed with waste and screens. This precaution is taken to prevent steel chips getting in bearings. The transmission drive is through 1 1/4 inch shaft and Spicer dustproof universal joints to the rear axle.

The front axles are of special design, 2-inch tubing, 3/4 inch wall. Steering connections have especially large bearings, all of which are equipped with "T" handled dope cups and protected by leather dust caps. The steering cross connections and steering link are adjustable, and the wheels may thus be lined up at any time. The axle is dropped in the centre to protect the fly wheel and other parts beneath the car. The rear axle is equipped with Timken roller bearings throughout.

The car has bevel gear drive, the ratio of the gear being three to one for standard equipment.

The brakes are of the internal expanding type, with toggle set-up, either camel's hair or metal lining being used, depending upon the section of the country to which car is shipped. The brake drum is of pressed steel, twelve inches in diameter, 2-inch face. The brake on the cardan shaft at rear of transmission is operated by foot pedal, while the emergency brake upon the rear wheels is operated by a hand lever. The application of emergency brake throws out clutch, disconnecting transmission from motor.

The frames are of pressed steel channel section. A sheet steel plate rivetted between side and sub-frame gives a pronounced bracing effect. The dust pan attached to the sub-member and extending from the front across member to the rear of transmission is removable. Both the engine and transmission are aligned upon a sub-frame and all working parts may be removed without disturbing the hanging of the crank transmission cases.

The steering is accomplished through a worm and nut mechanism. The nut is long and has a wearing surface babitted so that same may be replaced at any time. The steering gear case is securely bolted between sub-frame and side member. The spark and throttle levers are placed upon the steering post just beneath and at the right of 16-inch oval rim steering wheel.

A Winter Tour in Ontario

THE following automobile jaunt was taken about three weeks ago from Detroit to Hamilton and Buffalo by a party of Americans in a single car. One of them relates their trip in Motor Way as follows:—

"Sunday morning, after a long wait, we passed the customs house at Windsor, and started for St. Thomas. We were told to take the Talbot road; but as there was not a guide-post to be found, we missed our way and had to do at least twenty miles extra. We reached Leamington about 4 p.m. and, after talking it over with a man who said he knew, we decided to try for Ridgetown by what he said was a good gravel road. It really seemed as if he did know, the roads were so very good for the first few miles; but then we came to a wet clay stretch over three miles long. It was very heavy and hard pulling and took us nearly an hour to do. Darkness came before we had finished. When we tried to start the acetylene generator it was frozen. Finally, getting it going, it did very well for a while and then the only way to keep the lights burning was to keep kicking the water tank. This I did for three long weary hours. The road became much better and we made very good time considering the darkness. We lost the way some fifteen miles out of Ridgetown, and had to traverse a half-mile stretch, where there were loads of clay dumped all over the road and frozen stiff. Some heaps were two feet or more high. We ran into this at twenty miles an hour, and thought that our time had come. The lights went out and for a time we were in a sorry plight. We had to go over that road, and so over it we went, but it was worse than the trestle. Then we came to a church, to which all of the good people and some of the bad ones, as we soon found out, had come by horse power and had gone inside without shutting down the motors. The road was lined with horses on both sides, and the fun began before we were within a quarter of a mile. The worshippers must have heard something, for by the time we had stopped they were all outside. Some did not hesitate to say what they thought of us in language not scriptural. We were probably saved from bodily injury by the fact that the horses took up their attention, and that some of the owners whose horses were not frightened saw the funny side.

"We made Ridgetown at 8 o'clock, tired and hungry. Our reception here was a surprise. The hotel people were glad to see us and did all in their power to make us feel at

home, getting a supper for us after hours. The cook had gone to bed, but did not grumble at being turned out.

"It was 11 o'clock the next morning before we got all the necessary supplies together and had put the mud of Ridgetown behind us. With the assurance that we had been travelling over the wrong road and that the Back street was the best, we fully expected to reach Woodstock that night. The roads were better, but the horses were not so tame. We started several runaways in the first hour. None of these were serious, however, and all was going well when one of the wildest equine specimens I ever saw hove in sight. He was loose and would not run or scare, but, instead, insisted in crowding us off the road, which he finally did. It was a new one to us.

"Soon after this the engine began to give forth very unusual sounds, which we knew must be due to something loose.

"The next day it rained all day, with the variation of a thunder shower at night. We started on again Wednesday at 1.30 p.m., in the hope that the high wind had dried the roads. Travelling was very good for the first few miles and we were congratulating ourselves on our good luck when we came to a stretch of real mud. There was over ten miles of it. Before we had gone two miles it commenced to freeze and we found that we must keep going on or be stuck in the hardening mud.

"At 5.30 it commenced to snow and by 5 o'clock the snowing was a blizzard. At lamp-lighting time we found the generator frozen again. Happily I had some wood alcohol on hand, and we soon fixed this. Without other trouble we rolled into Woodstock at 8.45.

"We left at 9 o'clock the next morning and had the best run of the entire trip, reaching Hamilton at 1 p.m.

"The run down the mountain into Hamilton was fine. The road was good, the air was brisk and bright and it was down hill 300 feet in six miles. We went as fast as fifty miles an hour at times.

"Just before reaching Niagara Falls we struck a piece of road that was so bad that we stopped to photograph it. It was frozen hard and was worse than a badly plowed field. Some of the ruts were a foot deep with no chance of getting out of them should the car get in there. Neither was there any chance of running on one side of the road. It was more than two miles long and being a much

travelled road, it was full of nervous horses. It was the hardest stretch of driving that either of us had ever experienced.

"The Welland House is the finest hostelry in that part of Canada, and while our stay there

was short and expensive, it was pleasant. The next day we made Buffalo at 1 p.m., and on learning that there was considerable snow ahead we decided to ship the car to Boston by rail."

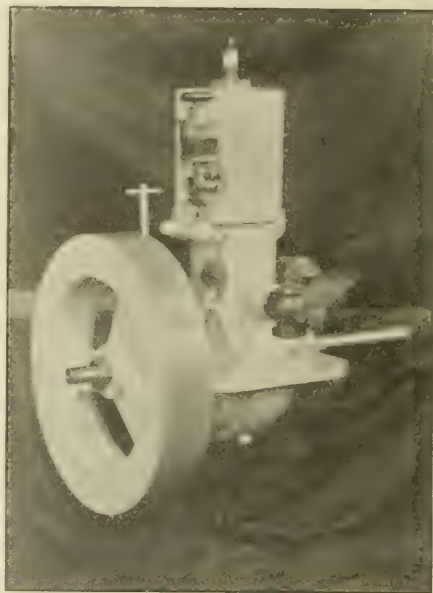
The Bell Marine Engines

THE marine engines made by The Albert Bell Engine Works, Dunnville, Ont., are of the two-stroke cycle type. That is, the piston is driven forward on the initial stroke by the explosion of gas at each revolution of the engine. In general principle the engines are quite similar to a great many more of the higher class engines now on the market.

The aim of the manufacturers is to produce engines which will drive the full horsepower of their rating and have a margin of reserve, and which will be capable of enduring the hardest service with the least possible trouble.

The company's standard engine is so constructed that it may be equipped as a two-port engine or a three-port engine as the customer may see fit. The crank shaft is of drop forged steel, with flywheel overhanging the forward end of frame, as is usual. The engine is built with one, two, three, or four cylinders, developing three and one-half, seven, ten and one-half, and fourteen horsepower.

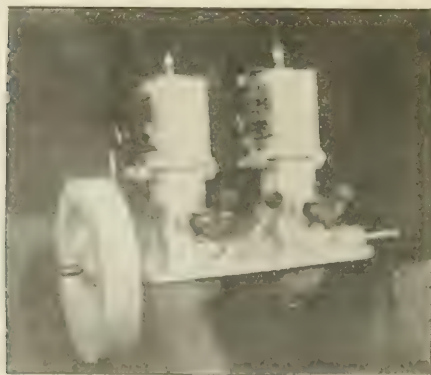
Their special engine differs from the standard in the following respect. The fly wheels are within the crank case, and they form the crank. The object of this arrangement of parts is to oppose the shock of the explosion directly by the weight of the fly wheels, instead of by the frame. As a result we find that the shock usually sustained by the bed logs is absorbed to a great extent by the fly wheels, and consequently the engine is much



less prone to vibration than is usually the case at high speeds. The special is also built with one, two, three and four cylinders, developing six, eight, twelve, sixteen, eighteen and twenty-four horsepower. The ignition in all of these engines is jump spark.

OILING SYSTEM.

The oiling system is worthy of considerable notice. In many two-stroke cycle engines, lubrication is grossly neglected. If any part of the engine requires lubrication more than another it is the crank pin. Still it is a fact that in some engines the crank pin gets none. In the Bell engines the cylinder, the upper wrist, and the crank pin, receive an abundance of oil from the cylinder lubricator. The method is as follows:—The lubricator feeds the oil to the cylinder in the usual manner. This oil is distributed around the cylinder by the rings, one of which is so located that its upper edge coincides with the centre of the hollow wrist or cross-head pin. This ring gathers a portion of oil into the end of the wrist, filling the hole in its centre. The oil is



next conducted by holes through the wrist to its surface, thereby lubricating the upper bearing. A hole drilled down through the entire length of the connecting rod carries an abundant supply of oil down to the crank pin. Experience has shown this system to be eminently satisfactory.

REVERSIBLE PROPELLER.

The reversible propeller is a later development. It is made in various sizes; in construction it is simple. The pitch is a true screw, and that of both blades is the same. The blades are perfectly balanced upon their shanks, and may be reversed with ease while driving full load. In operation it is powerful, and the blades may be easily replaced in case of accident.

Troubles in the Rain.

MOTOR boating, like yachting is not always, to borrow a phrase from the latter pastime, plain sailing. Perhaps if it were so, it would not be so interesting. In any case motor boat enthusiasts are usually ready to recognize the humor of their adventures with cranky engines, and certainly they delight to tell about them afterwards. The following account by a Toronto boy in a letter home from New York, of an ill fated trip on the Hudson River, may awaken memories in the minds of some of our readers. He was the guest of a friend who had planned to take his fiancée for her first cruise. In the launch were the two young men, two young ladies, and an elderly lady as chaperone. He writes:—

"Monday being a holiday we were to leave early Saturday morning and make three days of it. We all collected at 8.30 a.m. at the boat house *in the rain*. Three days' provisions were put aboard, an all night accumulation of rain was pumped out, grips and dunnage bags stowed in the cabin and we started.

"We descended the river a few docks to the Standard Oil Wharf, where we filled our tank with gasoline, then on to Ludlow for a supply of ice. We just managed to limp into the ice dock on one cylinder—and that was our last limp. Having taken the ice aboard, we started for Greenwich Bay in the Sound, but got no farther than turning the screw by hand would take us. Not another explosion could we get out of the engine. We re-wired both cylinders from the batteries, put in a new set of the latter, primed the engine, broke our backs turning the starting wheel, and after working six solid hours to discover the difficulty during which time we were *drifting in the rain*, we gave up and looked for a tow home. It was then five o'clock and fortunately a man in a launch less than half a dozen lengths,

trying to get to shore by paddling. He came over, proved to be an acquaintance of mine and offered us a line. The tide was running out strongly and to reach Yonkers we had to go five miles against it. The little 3 h.p. launch just crawled along tugging its big and helpless friend behind. We hugged the shore where the current was least, and by sticking at it finally reached Yonkers at 7.30 p.m. *in the rain*.

"I was wet from head to waist under an oilskin by perspiration, and from waist to feet by rain. More miserable weather could not have been contrived, but we had a jolly time, plenty to eat and plenty to do. The girls were mighty glad to get home, though no more so than I. They were, of course, in the cabin all the time and quite dry.

"The rain continued all that night, through Sunday, and well into Monday. Then the sun appeared and brought the first ray of comfort for three days to this part of the world."

Measuring Horse Power of Motor Boat Racers

THE following new rules for measuring the horse power of motor boat engines for the purposes of racing were adopted recently by the American Power Boat Association, whose racing rules have been adopted generally.

"In four-cycle automobile engines the area of the piston in square inches shall be multiplied by the number of cylinders and divided by two. In two-cycle automobile engines the area of piston, multiplied by the number of cylinders shall be divided by 1.5. In all other engines the area of piston shall be multiplied by the number of cylinders and be divided by three in four-cycle engines, and in two-cycle engines by 2.25."

This change does away with counting the revolutions. It assumes the piston speed at 1,000 feet a minute for automobile engines, and 666 feet for all others; and the mean effective pressure at 66 pounds per square inch in four-cycle engines and 49.5 pounds for two-cycle engines.

In a four-cycle engine $3\frac{1}{4}$ inches bore and from three to four inches stroke the mean effective pressure averages about 66 pounds, but in an engine five inches bore it comes nearer 75 or even 80 pounds, and the rule therefore favors engines of a large bore.

The rule also is said to be unfair to the two-cycle engine in that the rated horse power is based on a mean effective pressure of 49.5 pounds per square inch, while actually it averages in engines of four to six inches bore nearer 30 or 33 pounds.

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Change of Copy for Advertisements should reach this Office not later than the 20th of the previous month—Cuts and Copy for New Advertisements can be received as late as the 1st of each month.

E. M. WILCOX	- - -	Editor
S. W. GRANT	- - -	Adv. Manager

TORONTO, ONTARIO FEBRUARY, 1906.

A Point of Justice. On January 27th, a well-known Toronto motorist was served with a summons, sworn out also on the 27th, to appear at the Police Court on the charge, "that on the 7th day of January you did drive your automobile at an excessive rate of speed on University Avenue."

In other words, three weeks after the alleged offence occurred, this gentleman was summarily called to answer a charge, regarding which the law laid upon him the onus of proving that he was not guilty.

His "Irish" was up 'when he read the summons. He prides himself on observing the law in respect to driving, but that was not the point. He is not in the habit of keeping a diary, with a minutely detailed account of his actions. Without such an account, how was he to recall the circumstances on which the charge was based? On reference to the calendar he found that the 7th was a Sunday. Then for several days he racked his memory to find what he did on that particular Sunday.

After some cogitation he decided that he was in Toronto. Yes, so far, the charge was true. Gradually, by piecing things together, he traced his movements throughout the day. The result was that he did not drive in a large car

that day at all, but only in a runabout, incapable of exceeding the speed limit, and was not at any time on University Avenue. He determined to fight the case.

The result of his defence does not matter here. The injustice of the delay in issuing the summons is manifest. This is not an isolated case, but only a sample of many similar cases of annoyance caused to other motorists. By all means let the speed regulations be enforced, but in a reasonable and just manner, so that the accused one may be given a fair chance to defend himself, whether guilty or not guilty.

The Era of the Motor Boat. MOTORING afloat is a comparative youngster among the aquatic sports of Canada. Indeed, it is quite a baby, not more than three or four years old.

Great things are expected of it, however, for it gives indications of unusual vitality.

Motoring on water has some advantages to motoring on land. In the first place it combines many of the charms of yachting and canoeing, two of the most popular sports in Canada. In the second place, it is cheaper. Motor boat engines are much less expensively constructed than automobile engines. There is no change-speed gear, or at least one of most elementary form; there are no wheels, wheel bearings, or axles; there is no differential; the cooling system does not involve the use of an expensive, fan-cooled radiator; and even the muffling is simplified by cooling the exhaust. The steering mechanism is less complex, there is less to lubricate, and the controlling mechanisms are fewer in number. The most expensive part of automobile maintenance, tire repairs, is entirely avoided with the motor boat and the consumption of fuel and lubricants is much less. Also, the cost of maintaining the machinery is reduced to a minimum. Apart from cost, the choice between the automobile and the motor boat is purely a matter of taste.

The auxiliary yacht seems to be entering into its own. Last fall, Aemilius Jarvis, skipper of the R.C.Y.C., set the lead in Toronto, by purchasing the fine yacht Sitarah, an auxiliary. Prejudice against the auxiliary

yacht dies hard with many yachtsmen, but even they must admit the utility of the despised motor in times of need.

A Halifax correspondent mentions that motor boat racing will be a prominent feature in the maritime provinces this year. Toronto had some exciting races last summer, for the first time. In Muskoka, racing also was indulged in. Just as in automobiling the sensation of speed is the most enjoyable feature of motor boating. Moreover the motor boat man may push his craft to the limit without any uneasy sense of breaking the law. Hereafter racing motor boats will form a class of their own in Canada, as they have done in the United States and Europe.

For commercial purposes a very important development awaits the motor boat in Canadian waters. Down in the maritime provinces it has worked a revolution already in the fishing industry. Fishing smacks equipped with gasoline motors can defy the wind and weather.

The fishermen of the Upper Lakes, too, are adopting the new method. In point of utility, the motor boat will take many forms, as its possibilities are realized.

For pleasure and utility alike, Canada is an ideal home of the motor boat. Nature has endowed this country with waterways unsurpassed anywhere. First of all the Great Lakes, and especially Georgian Bay, with its thirty thousand islands,—what a field here for the cruiser! Then think of the Muskoka Lakes or the Kawartha Lakes, or Temagami, the latter with its miles and miles of picturesque coast line and studded with wooded islands! Finally the majestic St. Lawrence with its Thousand Islands, and you have compassed roughly only a part of a picture which contains too much beauty for anyone to attempt to paint. Under such conditions it is not surprising that motoring afloat is assuming a prominent place in Canadian sport and industry.

The Coming Motor Show

MUCH of the same kind of success that made the two New York automobile shows last month the greatest events of the kind ever held in America, has attended the efforts of the committee, which is organizing the coming Canadian Automobile and Motor Boat Show to be held in the Granite Rink, Toronto, from March 31st, to April 7th.

The members of this committee are:—G. H. Gooderham, chairman; M. A. Kennedy, H. H. Love, William Hyslop, and E. M. Wilcox, manager.

These gentlemen attended the shows in New York, where they got in some good work for the Canadian show. Arrangements to bring exhibits of 1906 automobile models to Toronto were completed, sufficient to fill the entire space devoted to automobiles. The cars to be shown comprise about thirty different makes, Canadian, American and foreign.

The accessory part of the show promises to be thoroughly representative. Some of the accessories to be shown, as for example, one exhibit of French accessories have never been seen in Canada before.

The most gratifying feature about the preparations for the show so far has been the keen interest taken in it by Canadian firms. Canadian accessory dealers will nearly all have exhibits. Motor boats and marine engines, too,

will be quite prominent, certain firms having taken large space in order to show their lines. In the motor boat section a special feature will be a 31-foot speed boat shown by a Toronto firm.

The Granite Rink, in which the show will be held, consists of two buildings, the curling rink, and the skating rink, with a total floor space of 24,000 square feet. The curling rink, at the rear, which is the larger of the two, will contain the automobile exhibits. The other building, through which the public pass from the main entrance on Church Street, will contain the motor boats and accessories.

Following the practice at the New York shows the committee decided at a recent meeting to carry out a uniform scheme of decorations in each building and will also provide uniform signs to exhibitors at its own cost. No pains will be spared to secure the most attractive effect.

As in New York, there will be a grand opening on Saturday afternoon, March 31st, at which special music will be provided, afternoon and evening. Orchestra music will also be provided in each building every evening of the following week.

For out of town visitors, railway rates will likely be a fare and a third, on presentation of a certificate, or the regular convention rate, though a lower rate may yet be arranged.

The Making of a Motor Car

Interesting Process in a Canadian Factory

ALTHOUGH considerable prominence has been given of late to the fact that automobiles are being manufactured in Canada, few people realize what it really means. They have a general impression that all the important parts that go to make up a car are imported from abroad and that all that is done

mobiles, but the parts which enter into them. He realizes then that these cars are really made in Canada and that almost unknown to the public, a large, new industry has sprung into being in the last two years. The photographs shown here give some idea of the operations and various departments of the factory.



Factory of the Canada Cycle & Motor Company, Limited, before additions to Automobile Department, made this winter, had been undertaken. The additions include one building 50 x 120 ft. and another 75 x 60 ft., three stories high, occupying together about 20,000 square feet of floor space, adding nearly half an acre to the floor area of the Company's factory, making in all a floor space of 215,000 sq. feet on approximately five acres.

in Canada is to assemble these parts and paint them.

This is far from being the case at the factory of the Canada Cycle & Motor Company, Limited, in Toronto Junction. A visitor there finds some 375 men busily engaged, and the whole plant and machinery of an aggregate value of between three and four hundred thousand dollars working with day and night shifts to turn out not merely complete auto-

A description of a few features of the interesting process through which the "Russell" cars pass before they are placed on the market in a finished state, follows:—

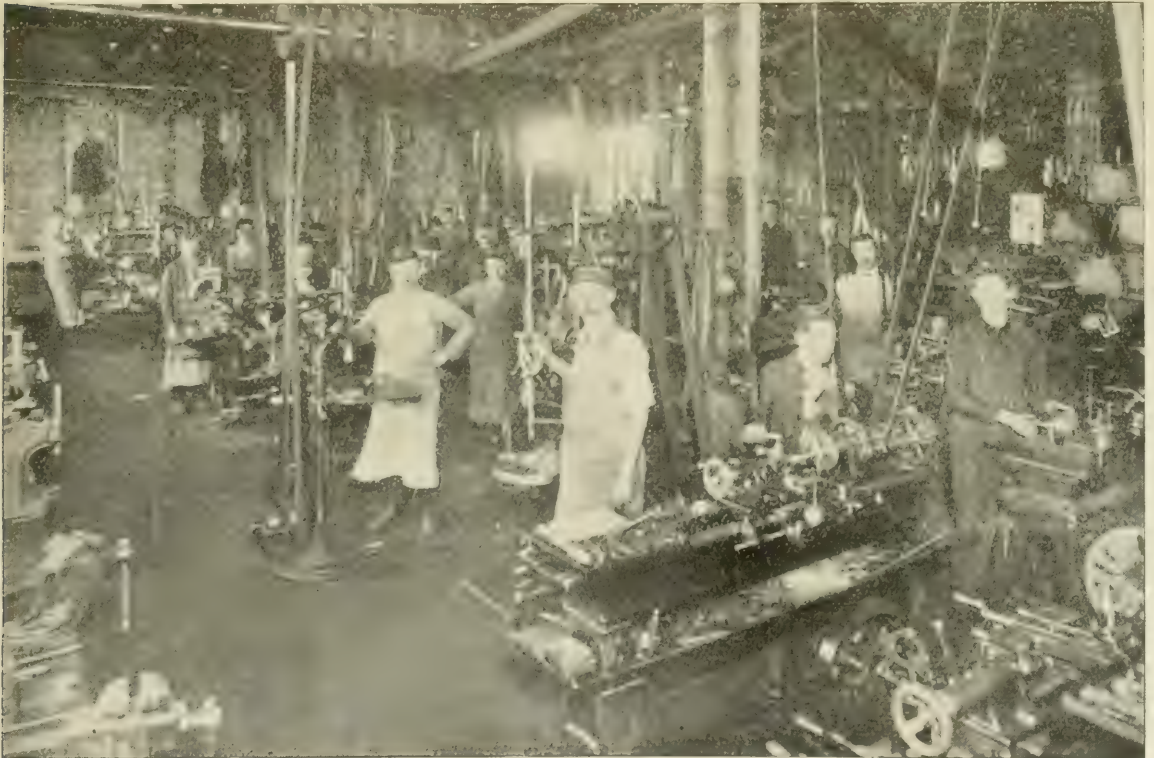
The Engine

The engine is generally regarded as the heart of the automobile. The company builds its own engines. The cylinders are obtained from a foundry giving special attention to

the casting of close hard special gas engine castings. These are received in their crude shape, are bored out and faced up in the boring machine. The crank case is made from aluminum. These castings are made in the company's own moulding shop where skilled workmen are engaged in casting most carefully prepared alloys of the now well known metal, aluminum. The crank shaft, which has to stand the stress of the engine's power, comes in bars of steel about six feet long and seven by three inches in width and thickness. This steel is of special high grade nickel alloy specially prepared for this work. The bars are sawed up, drilled out to shape, machined on the lathes and handed over as finished crank shafts to be assembled into the engine. Nickel steel valves are shown



An addition to the plant this year, 120 ft. long and 50 ft. wide, with light on all sides, cement floor, no pillars obstructing the room. This building will be devoted to the adjusting and testing out of the completed cars after they have been assembled and before they are turned over to customers. Facilities will also be provided in this department for the over-hauling and care of customers' cars.



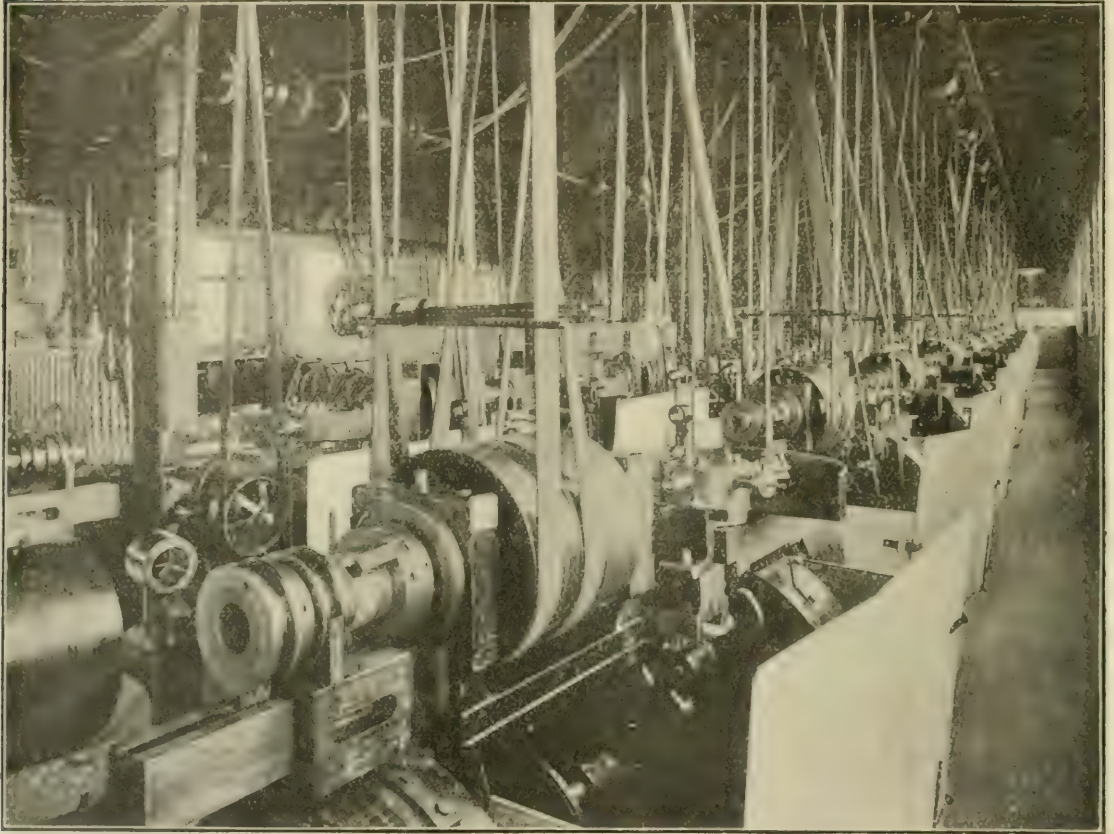
One corner of the tool room department. Beginning at the extreme left is a new Cincinnati universal milling machine installed this year for automobile work, and in the foreground are special tool room lathes.

in the illustration as they are being ground to the absolute accuracy of 1-1000 of an inch on other machines; and finally these component parts are assembled in the complete engine. This engine is run by a belt with oil for two days, then it is sent down to the testing room where it runs on its own power and is tested for two or three days when it goes on to be as

receive the mechanism which is to be attached to them.

Transmission Case

Every portion of the transmission case is of the company's own manufacture. From the moulding shop come the carefully prepared aluminum castings for the case. These go to



One of the most interesting departments of the factory. Here in four rows throughout the length of this department of the shop which is 150 ft. are placed in all some fifty automatic machines. A bar of steel is fed in at one end of a machine and from one to four or five tools will operate on it turning out the cup or cone, or bolt, or screw that is required. No attention whatever is required except that a skilled mechanic watches carefully to see that the tools are in the best condition. Positively driven pumps provide lubrication.

sembled into a complete car and run out on the road for final test.

The Frame

The frame of the car is also built from the ground up. The most carefully selected white ash only is used. This is cut in strips and laminated together. These laminated members are reinforced from end to end with specially designed strips of sheet steel. The frames are then assembled, the angles carefully braced and sent to the assembling room to

the machine shop where they are faced off, thence to the assembling room ready to receive the gears. The gears meantime have come to hand, in the shape of special bar steel. This goes to the drop forge department where they are drop forged into shape, thence to the machine department where they are machined, thence to the automatic gear cutter, where the gears are cut to absolute accuracy, thence to the carbonizing ovens, whence they come back ready to be assembled in the transmission case which has been waiting for it. It is a

common thing for the foreman of the shop to allow the visitor to put one of these gears into a vise and endeavor with a hammer to break or bruise or damage the teeth. Of such quality is the steel itself and the manner in which it is tempered, that efforts in this direction are in vain. The transmission case then completed goes on to the assembling department to join the engine and the frame.

Axles

Axles are required to support the frame. The parts of the axle come from various departments. The axle stubs and the steering knuckles enter the factory in the shape of crude forging steel. These go to the drop forge department, are forged into shape, then to the machine room where they are fitted to the specially prepared and reinforced weldless steel tubing which forms the front axle. In the case of the four cylinder car, specially drop forged and electrically welded "I" beam front axles are used. The parts of the rear axle include the differential and bevel gears which are made similarly to the trans-



A row of up-to-date milling machines for completing the operations on many of the automobile parts.

mission gears above. Then these axles too follow on to join the frame and other parts in the assembling room.

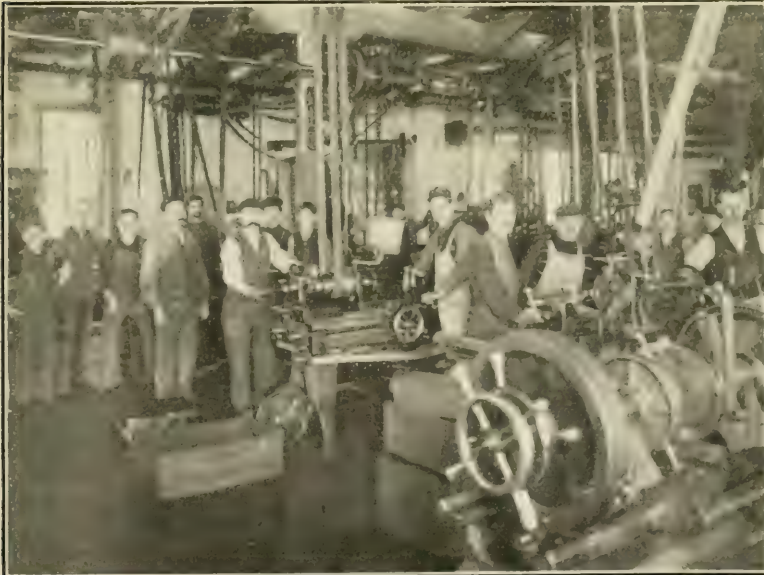
Yes, the wheels are Canadian, too. The hub centres and bearings are machined in the company's factory. Thence they are sent to the wheel maker where the wooden felloes and spokes, of carefully selected hickory, are used to make the complete wheel which also then makes its way to the assembling room.

The Radiator

In another department may be seen the radiator. It is built up from brass castings. Into these is fitted copper tubing around which is wound thin spun copper so as to provide for the greatest cooling efficiency. In the same department are to be seen men busily engaged manufacturing the fenders, mud guards, the hoods for the bonnet in front and the mufflers and other similar parts.

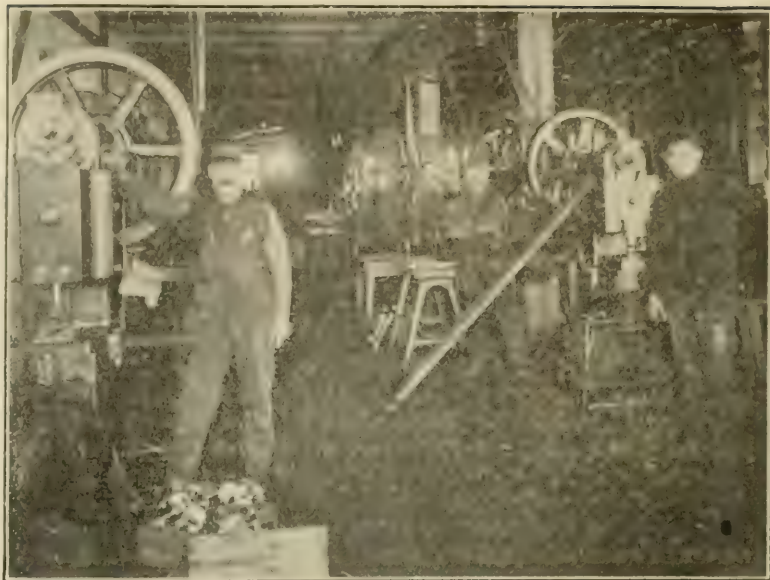
The Bearings

A special paragraph should be devoted to the bearings. An automobile which is to run for thous-



Large power lathes fitted up with special tools for turning out some of the heavier parts required for motor axles and frames.

kinds of miles under all kinds of roads and conditions, sometimes with good lubrication and sometimes without, must have bearings that are practically impervious to wear. The company's long experience in the manufacture of bicycle bearings, which have to stand under identically the same conditions, has aided it greatly in turning out bearings for motor cars. Specially selected steel is used to commence with, and these are machined to shape on automatic machines which work with unerring accuracy. These parts are then sent to the carbonizing department. In this department by a skilful process a hard close-grained surface is obtained on the bearings to a depth of 1-32 to $\frac{1}{8}$ of an inch. This surface is of a high carbon hard composition steel, while the inside remains of a soft tough quality, thus preventing any tendency to



A corner of the punch press department. This department has been working twenty-four hours a day for the past two months in a new department of the Company's work, the manufacture of skates. Now it is being turned to the finishing of the sheet steel parts which enter into the construction of the automobile.

brittleness such as would result if the bearings were of uniform hardness throughout. It is the secret of this process which has made the company's bearings in their bicycles and automobiles so uniformly successful.

Assembling

Thus part after part has come in as raw material, passed through each department up to the inspection department and from there on to the assembling room. In the assembling room these parts are fitted together, every one to its place, for it has all been laid out beforehand and every workman has his blue print to follow. There is no cutting or fitting or trying, but each part fits into the other and the complete automobile is ready to start. It emerges then from the factory and with a test body fitted to it is driven on the road for two or three days or a week. After doing one or two



A corner of the blacksmith shop. To the right is one of three 1,200 lb. drop hammers. Under these heavy hammers are shaped the strong forged steering knuckles, axles, levers and rods which enter into the economy of the automobile. In the same room are trip hammers, brazing fires and carbonizing ovens. Here the important operation of carbonizing all the bearings which go into the machine is carried out. This operation is one of the most interesting as well as the most difficult in the construction of the automobile.

hundred miles of driving over the kind of roads they have in the neighborhood of Toronto Junction, the makers are assured that it is fit for any roads that may be encountered. It comes back, has the old wheels and the test body taken off, goes to the paint shop where it is carefully painted. Meantime the body has come through and is ready to be attached. New wheels, new tires, new body are fitted, and thereupon the automobile is complete.

American vs. Foreign Cars.

MOTOR experts have been debating the question whether American-built cars can compete in quality with European cars.

Charles M. Schwab threw down the gauntlet against the American auto by saying:

"Yet it is notorious that American automobiles have not ranked as high as European automobiles. The truth is that we have hitherto made no genuine effort to produce forged-steel working parts of automobiles of

the highest quality. That is one of the reasons why our automobiles have not ranked as high as those of foreign make."

To this Mr. E. R. Thomas, the Buffalo manufacturer, replied as follows:

"As this seems to be the general opinion, naturally fostered and encouraged by foreign competitors, it seems time that the American, proud of home industry, should be informed of the actual facts, which, upon investigation, will convince the most skeptical that quality of material has been the smallest influence.

"There are several reasons why American automobiles have not ranked as high as those of foreign makes, quality of steel being the smallest.

"The leading reason is due to the fact that the American manufacturer spent many years in experimenting before reaching his final conclusions. In the earlier stages of the industry he used electricity as his motive power; then for one or two years steam was the popular power. After that he switched off to horizontal gas engines.

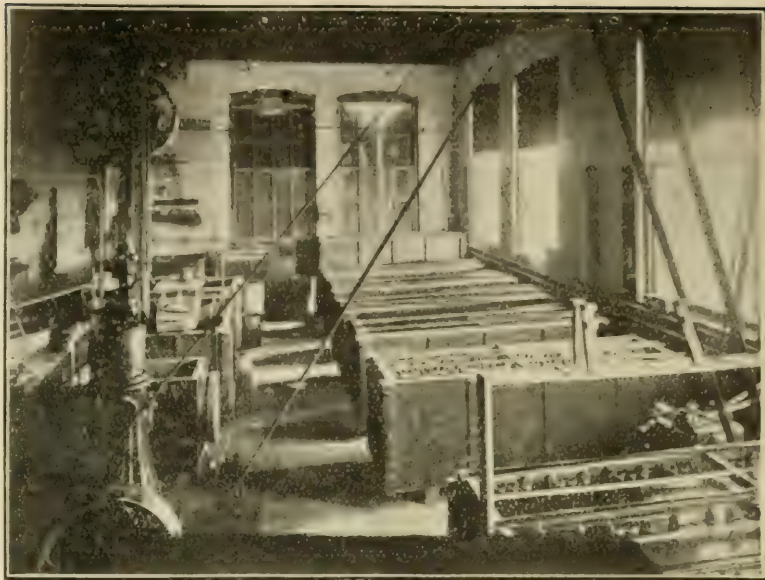


The whole of the machinery in this room is devoted to specialized work in automobile machine work. To the extreme right is a boring mill for boring out and facing up cylinders, fly wheels, etc. Adjoining it are two more Cincinnati universal milling machines. To the left of them again is a cold saw which methodically saws through a bar of steel just as an ordinary circular saw would through a log of wood. In the foreground is a grinding machine where the piston rings and other wearing parts are carefully ground to the accuracy of a thousand of an inch. Next to it is an automatic gear cutting machine where the gears are automatically cut by machinery to absolute accuracy.

"In the meantime, the foreign manufacturers had adopted the style of vertical motors in front, now practically the universal design, and this gave the advantage of a start of several years on the American manufacturer.

"Another great reason why the foreign cars were considered superior is that the makers of them first saw the necessity to introduce high power. This was not so much to gain excessive speed as it was to travel on hills and bad roads without overtaxing the mechanism. Higher power was not only contributory to the pleasure of the owner, but also eliminated, to a large extent, the expense of repairs and delays on the road.

"During the transition period, the American maker was using barely enough power to send his car over ordinary roads and if the valves were foul or any slight derangements occurred, the car could not climb hills or overcome bad roads. Under the same conditions the foreign



A corner of the large plating plant.

cars would continue to operate at fair speed. This has all been remedied now. The American manufacturers are using greater power and are more than holding their own under all conditions of travel.

"Still another reason for the belief that the foreign cars are superior to those of American make is the high price asked for them. But these high prices are due entirely to the fact that a number of middlemen share the profits and not because of any great intrinsic value or better workmanship.

"To sum it all up, the foreign cars have been sold to a certain class of buyers, mainly because they alone catered to the demand for high power, roominess and comfort, and because they were a year ahead of us in perfecting their permanent designs. Design, speed, power and size have been the causes, not an imaginary lower grade of materials or workmanship.

"This is proved in our own case. Last year we made and sold 400 high-powered and roomy cars. As a consequence, this year it has become neces-



To this point, at least, between every operation, every part which enters into the automobile. The men shown in the foreground are skilled workmen, whose duty it is with micrometer and gauge to size and test every piece before it goes on to the next operation, or before it passes finally into the automobile. If any part is defective, or under or over size these men detect it and prevent its being used.

sary to build a new factory with a capacity of 1,000 50 h.p. machines which will seat seven people and make a mile a minute.

"The time for the American manufacturer to supplant his foreign rival on his home grounds has come."

Eighty Millions Invested in France.

No wonder the French are alarmed at the visions of foreign automobile invasions. Great Britain, Germany and the United States, are the countries most feared, and with good reason. The extent of the French automobile industry is so colossal that it is worth holding at almost any price. The latest figures place the amount of capital invested at \$80,000,000, while there are no less than 300,000 workmen employed, who are paid yearly wages amounting to \$17,000,000. The government receives in taxes from the industry, \$2,400,000.



In the foreground are shown the frames of a number of cars in which parts are just being assembled. Farther back are shown a number of frames ready to be put on the stand to have the assembling operation completed.

No Bennett Cup Race Probable.

REPORTS from Paris state that delegates of the International Association of Automobile Clubs met and decided there would be no

race for the Bennett cup next year. It was arranged to hold another conference in June, 1906, to decide whether a race for the cup should be held in 1907 or whether it should be definitely abandoned. The consensus of opinion is that the race will be abandoned, the cup remaining in the possession of France. Some of the delegates censured the alleged bad organization of the race for the Vanderbilt cup on Long Island.



Showing a few of the wheels and bodies as they are being rubbed down and painted in the finishing department. The bodies receive coat after coat of paint, each one having time to dry and then being carefully and thoroughly rubbed off with pumice. In all seventeen coats are necessary to give the finish insisted upon.

THE AMERICAN LOCOMOTIVE COMPANY, of Schenectady, N.J., which recently entered the automobile building field and will make the American Berliet car, under the original French patents and designs, has organized and incorporated the American Locomotive Automobile Company, its capital stock being \$300,000.

THE TRADE END.

MONTREAL TRADE ITEMS.

FRED. THOMSON & COMPANY, electrical contractors, 326 to 330 Craig Street West, intend making a specialty of auto repairing this season.

A gang of men are at work on the new garage of the Eastern Automobile Company, 19 University Street, which will be one of the best equipped garages in Canada. During three days of the past month the Eastern Automobile Company closed business to the extent of \$20,062.

John Millen & Sons intend opening up at 321 St. James Street, next month. This move was rendered necessary by the large and growing accessory business handled by this firm.

Wilson & Company, of Ottawa, have opened temporary show rooms in Montreal at 124 Craig Street West, where they are handling for Eastern Canada the Franklin, Buick, Pope Toledo and the Baker Electric. In addition they control for the same territory the Schebler carburetor. Trade is reported excellent.

The newly organized automobile department of the American Locomotive Company, which will make the Berliet cars, will have a branch in Montreal. A factory is being built at Providence, R.I.

MAKES DRY BATTERIES IN CANADA.

The Berlin Electrical Mfg. Company, of Berlin, Ont., has commenced the manufacture in Canada of the "Best Dry" battery, which is guaranteed to register from 22 to 25 amperes and 1 6-10 volts. The company also makes flash lights in various sizes, automatic time switches and several electric novelties.

HAMILTON GARAGE.

THE automobile garage in Hamilton on Park Street, has changed hands, and will be occupied this year by A. P. Goering, who is also district agent for The Olds Motor Works.

W. P. KEARNEY'S LINE.

MONTREAL—A lively Canadian trade in automobiles is looked forward to this year by W. P. Kearney, of the Rubber Tire Wheel Agency Company, who has just returned from a trip to Europe in company with W. Hyslop, of Toronto, in search of agencies. Mr. Kearney's trip to England was not par-

ticularly fruitful, as he found there that the output was limited, and was practically all taken up. Mr. Kearney was amazed at the magnificence of the Paris exhibition, which far exceeded anything he had previously seen, and showed that the French were maintaining their lead in the automobile world. The exhibition comprised 1,600 cars in all styles. Here again he found that the manufacturers were mostly tied up to their old agents, and their output was ordered in advance, so much so that they were demanding a premium for early delivery. Mr. Kearney's line will include the Province of Quebec agency for the Darrach, Olds & Cadillac.

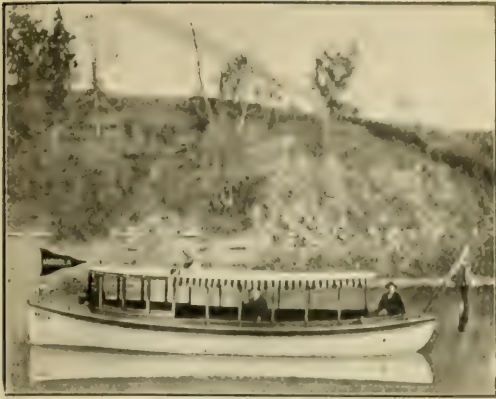
THE TWO CYCLE ENGINE.

It is several years since Otto invented the four-cycle engine. He has died in the meantime, but others have gone on developing the idea. Every manufacturer of automobiles in Europe is using Otto's idea. It was a Yankee named Coffin who decided that getting one power stroke out of every four revolutions was extravagant. He argued that a two-cycle engine would give the same continuity of power and could be made applicable to automobiles. Mr. Coffin is the chief engineer of the Olds Motor Works, and after considerable discussion received permission to go ahead and turn out a two-cycle, two-cylinder car, the Olds company being doubtful of the success of such a radical departure.

It is not a bit impossible that this venture by a big firm may be revolutionary. In the new two-cycle engine there are practically only three working parts—the piston, crankshaft and connecting rod—a lot of the valves, guides, etc., of the four-cycle type having been demonstrated to be absolutely dispensable. Mr. Coffin says that he conceives the two-cycle engine to be the motor of the future.

NEW YORK IMPORTS TREBLED.

THE imports of automobiles at New York have nearly trebled in two years. For 1905 1,036 machines with an appraised value of \$4,150,000 were entered at the appraiser's office. As the duty on the vehicles is 45 per cent. ad valorem, the Treasury Department derived \$1,867,500 revenue on the importations. Seven years ago scarcely an automobile was entered at New York.



35-foot 16-h.p. Motor Boat Cruiser, built by
J. N. Devins, Toronto.

MARION APPOINTMENT.

MR. J. S. CONWELL has been appointed general manager of the Marion Factory at Indianapolis. Mr. Conwell is a pioneer in the automobile field, having been manager of the Waverly Factory several years ago.

TEN THOUSAND FORD RUNABOUTS.

ONE of the sensations at the Madison Square Garden Show, New York, was a four-cylinder runabout listed at \$500. A year ago it was thought impossible to turn out such a car to sell at anywhere near that figure, and it is only possible now because of the large quantity which will be built. This car is one of the products of the Ford Motor Car Company, of Detroit, and was designed by Henry Ford, one of America's pioneer designers and builders of automobiles. Ten thousand of these runabouts are to be built this year and the low cost of the cars is due to the cheapness of buying parts and materials by the 10,000.

The Ford runabout is driven by a four-cylinder vertical motor developing fifteen horse power and located under a hood in front. The cylinder's dimensions are $3\frac{3}{4}$ by $3\frac{1}{2}$ inches, and the valves are mechanically operated and interchangeable. A shaft drive is employed and the transmission is of the planetary type, especially designed by Henry Ford, and giving two speeds forward and a reverse. The car has divided seats, is hand-somely finished and capable of a speed of forty miles an hour.

Trade News.

FOLLOWING his entry of a Pope-Toledo for the Bennett race of 1906, Colonel Albert A. Pope has further shown his belief in racing by entering again for next year's Vanderbilt cup race, no matter where it may be held.

A PROPOSITION is on foot to build in New York City an immense automobile mart, which will provide quarters for a great many car, accessory and tire dealers. As it is, 95 per cent. of the automobile business in New York is located along Broadway, between 38th and 63rd Streets.



THE Maxwell-Briscoe Company is using one of its 16-h.p. trucks to carry supplies to and from the railroad station at Tarrytown, with amazing results. The road used contains a 22 per cent. grade, in sandy soil. The total carried by the truck during one week was 132,094 pounds, the daily average for five days, 26,418 pounds. The truck has averaged a consumption of $2\frac{1}{2}$ gallons of gasoline a day during the month it has been in commission and one pint of oil per day. At current prices, it has cost the company to run it slightly more than 58 cents per day. Before the use of the truck the same work was done by three horse-drawn trucks, the hire of which cost from \$12 to \$15 per day. The motor truck makes from ten to fourteen trips a day, covering 30 to 40 miles. It has not yet failed on any trip to land its load at the factory.

C.P.R. Adopts Motor Cars.

From our Montreal Correspondent.

FOLLOWING the example set by American and English railway companies, the officials of the Canadian Pacific Railway are giving serious consideration to the question of using electric motor cars for suburban traffic. The introduction of this mode of traveling in order to provide more frequent service on sections of lines where regular locomotive train service would not be profitable, has been steadily increasing on the other side of the water, as well as in the United States. The experimental stage has been successfully passed and the Canadian Pacific Railway will make their initial introduction of these cars on some of the spur lines in the Province of Quebec.

The motor cars which the company will use, and, which they are arranging to build at the Angus shops under the supervision of H. H. Vaughan, it is said, will follow somewhat upon the lines of those in use on the Union Pacific and other American railways, changes of course being made to suit the local conditions. Each car will have accommodation for about 25 passengers and will be about 31 feet in length.

Should the venture prove all that is claimed for it on the Quebec branches, plans will be prepared for electrifying other portions of the system.

Airships at New York Show.

ONE very interesting feature of the A.C.A. Automobile Show in New York, was the exhibit of the various types of vessels used in aerial navigation, organized by the Aero Club of America. This exhibit comprised balloons, including dirigible balloons, parachutes, aeroplanes, gliding machines and power aeroplanes and tetrahedral box and other kites; lifting machines, both with propellers

and with wings; light weight meteorological instruments; a complete collection of the literature of mechanical flight; pictures of various flying machines, both in flight and at rest, and an exhibition of materials and accessories. In the latter were included special cordage and fabrics for balloons, gas proof varnishes, steel tubing and wire, gas valves, anchors, etc.

The Aero Club of America is an offshoot of the Automobile Club of America and was organized three months ago. In numbers about one hundred members.

Does Away With Cranking

A STARTING device that renders the cranking of an automobile engine unnecessary was shown for the first time at the New York show. It is the invention of F. J. Oliver, of New York, and is considered one of the most sensational improvements of the year.

The automatic starter is designed to start any gasoline motor. It is operated by a small release pedal. After the engine is started, it is automatically rewound and is disengaged so as to be ready for use again. The car can stand any length of time, a month or a year, and be started by the spring starter, which consists of a spiral steel spring enclosed in a dust-proof steel casing, the head of which

is provided with a band clutch releasing device, operated by a small pedal lever for releasing, and permitting the spring arbor to rotate and start the engine. As soon as this has been done, the pedal lever is allowed to retract and lock the spring clutch in a stationary position. After the engine is started the device automatically disengages itself, as soon as a predetermined speed of the motor is reached. If the motor does not start because of a poor spark or any other trouble, the device is wound up again and restarted.

The starting device can be attached to any size or style of automobile now in use and can also be used for gas and gasoline engines in motor boats.

Oil for Cold Weather

THE subject of cylinder oil for cold weather is a live one at present. There are three ways in which the difficulty caused by the oil thickening in the lubricator and refusing to flow may be avoided. It is not sufficient simply to provide a mechanical oiler, since, although this will undoubtedly force whatever oil gets to the pumps, the latter will not suck oil so thick as to refuse to flow to the pump under atmospheric pressure. In other words, the pump will simply produce a vacuum during a part of the stroke, instead of drawing the oil.

One thing to do is to use a lighter oil of the same general character as the heavy oil, and increase the feed. The lighter oil will not have the same body when it gets into the cylinder as the heavy oil has, and it will burn away more rapidly, so that for both these reasons an increase in feed will be necessary. On the other hand, this oil is cheaper, and the total expense of lubrication may not be increased. With this solution of the difficulty the danger

to be avoided is of getting an oil which carbonizes in the cylinder. The fact that the oil of medium density has a lower fire test than the heavy oil does not necessarily prove that it liberates more free carbon, but it is likely to do so.

The second way to avoid the difficulty is to use the same heavy oil as in summer, but to reduce it with kerosene, increasing the feed as before. The trouble with this is that kerosene itself leaves a certain amount of carbon deposit in the cylinder, but, nevertheless, this arrangement is often recommended and appears to be reasonably successful. Some users recommend using gasoline to thin the oil instead of kerosene. If the weather is cold the gasoline does not evaporate any to speak of, and it has the obvious advantage of leaving no carbon deposit. The third solution is to use a special cold test oil, which does not thicken in cold weather. Oil of this sort, which is made especially for this purpose, costs twenty-five to fifty per cent. more than ordinary cylinder oil.—Motor.

MOTOR FUN.

The Auto and the Idiot

THE Auto and the Idiot
Came moting on the scene;
The air was full of violets
And odors fresh and clean—
And that was odd, because, you see,
Their fuel was gasoline.

"O glory!" cried the Idiot,
"We're forging right ahead.
If I had wheels upon my feet,
I'd also run," he said.
The Auto moaned, "It is a shame
Your wheels are in your head!"

The Auto and the Idiot
Ran bang into a fence.
"To steering," said the Idiot,
"I'm giving thought intense."
And that was odd, because, you know,
He hadn't any sense.

Adown a pleasant country lane
They journeyed fast and far
Until they spied a gentleman
A-smoking his cigar.
"I'll hit him hard," the Auto cried,
"And minimize the jar."

Across the quiet gentleman
Right merrily they sped.
"Pedestrians should look alive,"
The busy Auto said—
And this remark was odd, because
The gentleman was dead.—Puck.

Almost, But Not Quite.

"How is your wireless electric car getting along?"
"It is perfected, all but one little detail, and I shall have that mastered in a few days."
"What is that detail, may I ask?"
"I haven't quite got it so it will run yet."
—Automobile Magazine.

Courtship a la Motor.

HE was her slave, this chauffeur brave;
She was a touring maid;
Gloved hands in lap, in leather cap
And dust-proof gray arrayed.

His hand, like steel, guided the wheel;
In tonneau she reclined;
Upon them played the sun and shade
Through leafy boughs entwined.



With Best Intentions.

MR. FULLER (genially)—Shay, organ grindersh! Play "Everybody Worksh but (hic) Father," an I'll (hic) sing it

He spoke—while far the panting car
Through shady wood-road ran;
A summer breeze sighed through the trees—
Alas! so sighed the man!

"Twin cylinder," he said to her,
"My heart's a motor true,
Which drives unseen life's gasoline,
Through all my veins, for you.

"I'm true as steel, my steering wheel,
My joy, my motive power;
Come—side by side, we'll smoothly ride
Through life's long touring hour."

From dawn to dark, he'd be her spark,
Her radiator, too!
Put on third speed, his suit to plead,
As o'er the hills they flew.

"When comes the night, your pilot light
To show the grades, I'll loom;
With you, my queen, acetylene,
To dissipate the gloom."

He plead that he her dash might be,
Her hamper, fender, step;
Her tresses tossed, her heart she lost,
She blushed and answered, "Yep."

The auto stood beside the wood
Without a driver bold;
Two in the tonneau sat as one,
Each other's hands to hold.

A stranger stayed and asked if aid
Were needed; but the maid
Looked up—"Oh, nit! We're just a bit
Short-circuited," she said.
—A. B. Tucker, in Motor.

Valuable "Expert" Advice.

HERE is a good story being told among the trade. A well known dealer says, "You all

understand, of course, that piston rings are necessarily split in order that they may be fitted snugly in the grooves provided for them."

"Well, a customer of mine, who is evidently built on the lines of the boy who took his Waterbury watch apart to see what made it go, took his car apart and could not reassemble it. He called in an 'expert,' and the concensus of their deliberations was embodied in a letter which I received lately.

"After an introduction of himself by the 'expert,' including a long recital of his vast experience with gas and gasoline motors, he said it was up to our company to furnish his client with sixteen new piston rings, as his examination showed each one of them to be broken, and, further, that strangely enough each one was broken similarly, showing grossly defective material."

Romance at the Show.

THE Sweet Thing stopped before his booth,
A vision of most perfect youth,
Of dreamy eye, of pearly tooth,
Of golden hair, of all, in truth,
That isn't ugly or uncouth—
A modern Venus she, in sooth.

He'd never seen such grace before,
His soul to heaven seemed to soar;
He quite forgot the girl who wore
The ring that he'd paid hundreds for;
The Sweet Thing smote him hard and sore;
Would she his wondrous love ignore?

"Fair one," he sighed, 'mid hopes and fears,
"Be mine thro' all the coming years;
Let's laugh at worldlings' gibes and jeers,
And wed at once, my dear of dears!"
"Back up!" she said, "My husband nears,
And I'm here just for souvenirs!"

—George Taggart, in Automobile Topics.

STERILIZED CURLED HAIR

The Griffin Curled Hair Company, Limited
TORONTO, - ONT.

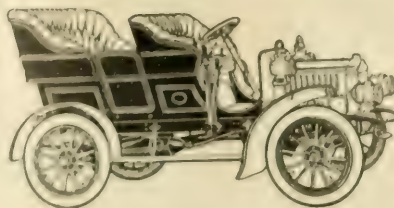
We are the largest and Oldest Manufacturers in the Dominion.

WRITE US FOR SAMPLES AND PRICES.

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AUTOMOBILES

AT A BARGAIN



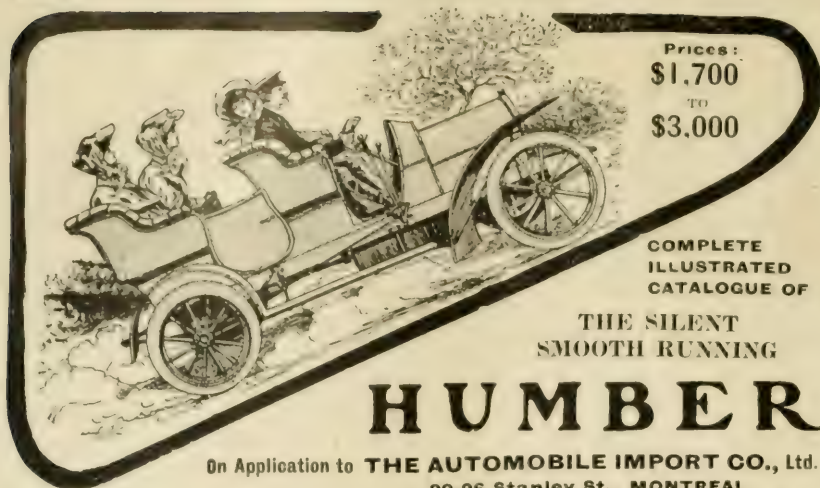
IN turning over our retail automobile business in the Cities of Toronto and Winnipeg to the Dominion Automobile Company so that we might devote our whole energies to the manufacturing of our Russell cars, we have a few slightly used cars of various makes on hand which we are now in a position to offer at bargain prices. All are in good running order, having been taken in exchange from purchasers of new and larger cars, and as we have disposed of our retail business these positively must be sold, and purchasers who desire a good car at a low price should see these machines at once.

The list at present is as follows :

One Mitchell two-cylinder, air-cooled, handsome runabout, divided front seat, large luggage basket in the rear, complete with oil lamps and horn, just the thing for a doctor, has been used only for demonstration purposes	\$550
One Winton 1902 model, two cylinder, 20 horse power, a strong, roomy car, costing originally \$2,500. The tonneau is removable and the car provides accommodation for five passengers	600
One Pope-Tribune , 6 horse power engine in front, sliding gear transmission and shaft drive; been used only for show-room purposes	500
One National Electric Stanhope , without batteries, but complete with top and otherwise in good condition	300
One Waverley Electric , complete with batteries, leather top and in good running condition	550
One Autocar , 1903 model, complete with removable tonneau. 10 horse power double-cylinder opposed engine under the bonnet	500
One Rambler Runabout, 6 horse power	300
One Rambler Runabout, Model E, complete with running board, specially wide mud guards and leather top	500
One Rambler two-cylinder with removable tonneau, 16 horse power double cylinder engine	600
One Ford , 10 horse power double cylinder opposed engine, removable tonneau	550
One Cadillac , 9 horse power, with removable tonneau	500
One Oldsmobile Runabout (curved dash type)	300
One Winton Stanhope complete with top	225

These cars may be seen at our late garage premises, corner Bay and Temperance Streets (now occupied by our successors, the Dominion Automobile Co.), where a run in any of them will be gladly given. Anyone in the country ordering one of these cars may be assured that it will be sent to him in good condition. Terms, 20% cash with order, balance sight draft attached to bill of lading or cash on delivery.

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AUTOMOBILE users, drivers, repairmen, chauffeurs and others wanted all over the country; 50,000 machines built this year in United States, affording great opportunities for men trained in this coming business. Six cents a day will qualify you for good wages in this field, in which the demand is such that ability counts ahead of pull and length of service. For full particulars, including free lesson and "Dictionary of Motoring Terms," address **The Correspondence School of Automobile Engineering**, Suite 1353 Flatiron Building, New York City. 7062

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Equip your car, launch or engine with the **APPLE AUTOMATIC BATTERY CHARGER**. Easily installed. Always keeps your batteries supplied with "juice." With this machine on your car your current will never fail at awkward moments, leaving you "stalled" far from home. Write to-day for information. See us at Chicago auto show. **The Dayton Electrical Mfg. Co.**, 150 Beaver Bldg., Dayton, Ohio.



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NO COLD HANDS, wear gauntlets if you wish, they will not get wet. NO SPLASHING water on the cushions or in the machinery. SAVES 60 LABOR. 40 WATER. Impossible to scratch or injure the finest finish. KEEPS THE VARNISH glossy and bright. Every washer guaranteed as represented or money refunded. PRICE quoted on application. Send for Catalogue.

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60 Lenox St., ROCHESTER, N. Y.

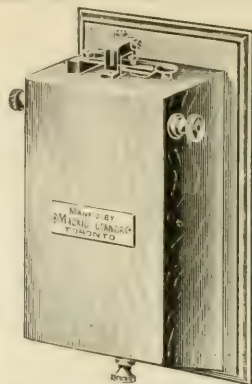
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LILLIE—Clara's latest automobile won't do, will it?

ELLA—What's wrong with it?

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COILS

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High Speed

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Full Hot Spark

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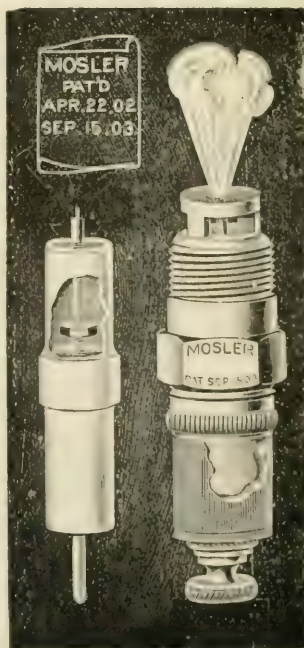
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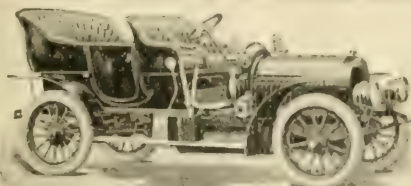


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MODEL G \$3,500.00 40 H.P.

Built with care and with the greatly in-
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With Carpentier
Interrupter or
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Are the most perfect
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These famous coils
are used on the
best makes of French
Cars, consume about
one half of the current
on any other coil, and
make the batteries
last twice as long.

We guarantee them
to have 30 per cent.
more efficiency than
any American-made
coil.

We also guarantee
that the celebrated
Carpentier Interrupter
with which they are
fitted will never
stick.

The Guenet Coils
have spring contacts
throughout and are
contained in fine,
highly polished closed
boxes.

Nothing to Compare with them in America.

Being the sole agents for Canada and having contracted
for a large quantity of these fine coils, we are in a
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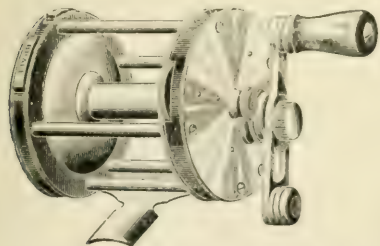
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It pays for itself on first installation. GUARANTEED, POSITIVE, SIMPLE, SUBSTANTIAL, ORNAMENTAL. No short circuiting; no harm to coils. Does the trick, besides has all the good features of other Switches. Garage and Repair concerns find the installation of these Switches a source of much profit.

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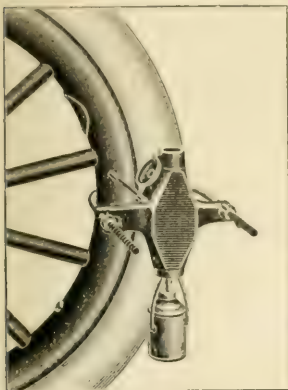
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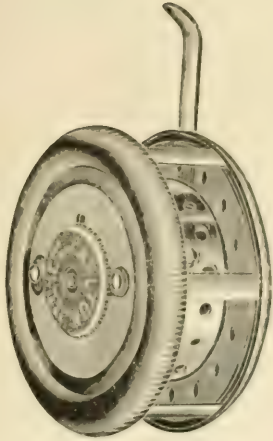
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As the CANADIAN MOTOR is the best of its class, so the fountain pen here shown is at the top of its class, being of the simplest possible construction, made of hard rubber with two gold bands and fitted with a guaranteed irridium pointed 14-k gold pen. The retail price of this pen is \$5.

Because the number of these pens we have to dispose of in this fashion is limited, the above offer is open only from 90 days from date, so send in your subscription now and get your \$6 for \$2.

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Please enter my subscription for one year to CANADIAN MOTOR and send me fountain pen (medium or fine point) as per your offer, for which I enclose \$2.00.

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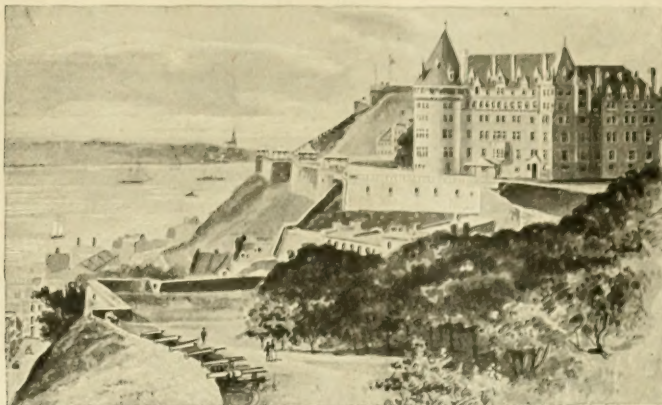
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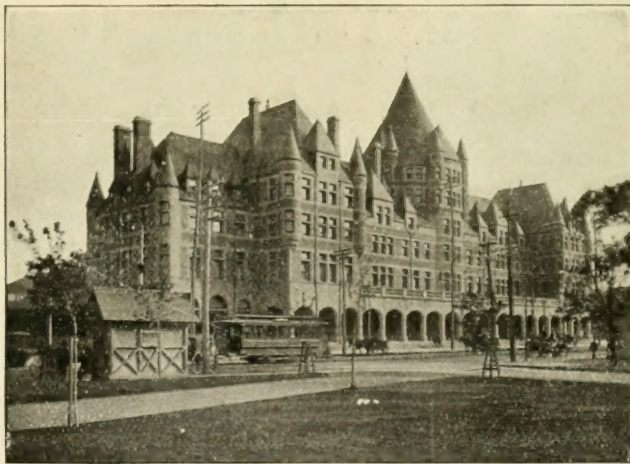
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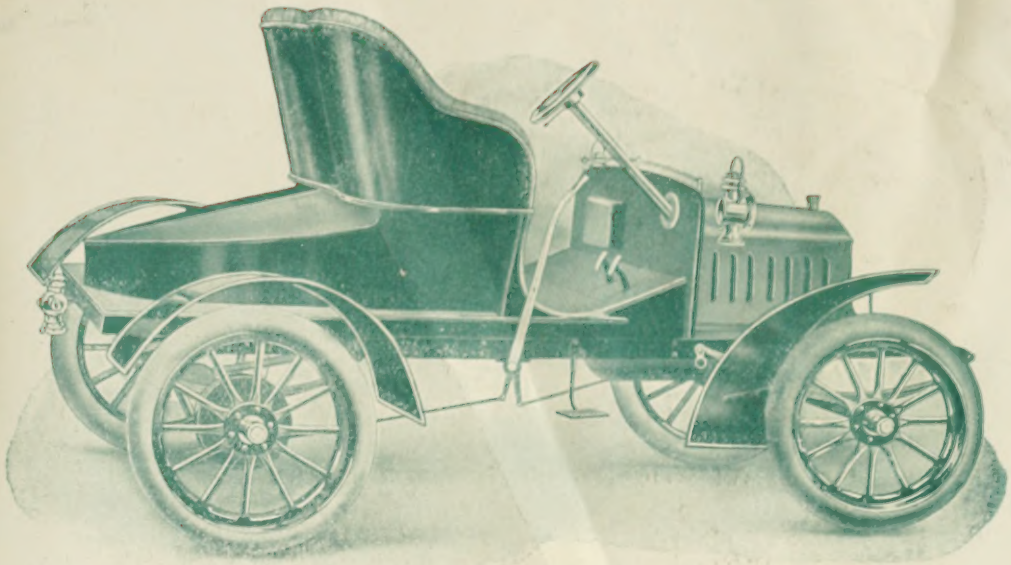
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Talking It Over.

During the long winter evenings there is nothing more interesting or profitable than to study up the subject of summer holidays and learn a little of the many attractive districts in Canada that are reached by the Grand Trunk Railway System, and which are becoming more and more popular each year. Handsome publications descriptive of these regions and containing maps and all information may be had for the asking by applying to

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The production of the new FORD RUNABOUT now on the market for 1906 is without dispute the greatest stride the automobile world has ever seen toward minimizing the cost of construction and up-keep in the motor car.

This car has a 4-cylinder 15-h.p. engine with a speed range of from 3 to 40 miles per hour on high gear. Weight only 700 pounds. Divided seats for two persons.

Equally important to automobile advancement is the introduction of the **Ford 6-Cylinder Car**. This car proves conclusively that the multiplication of cylinders, when accompanied by simplicity of design, not only increases the flexibility and power of the car, but reduces the automobilist's troubles and increases his confidence in his ability to always "get there" on time.

For further information regarding our 1906 cars write

THE FORD MOTOR CO. OF CANADA, Limited
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New Factory, Booth Avenue, Dunlop Tire & Rubber Goods Co.

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There are other reasons just as important, among which are :

One Sure Tire, with Wrapped Tread, an Improved Breaker Strip Preventing Shuffling of Cover and Reducing Liability of Punctures.

It is said imitation is the sincerest flattery, but our quick detachable head has not been approached by any other type yet offered, and we have new and important improvements in this feature.

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